

# **Implementing Environmental Site Design in Montgomery County**

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## Executive Summary

The Montgomery County Executive and Council President established the Clean Water Task Force (CWTF) in 2006 to evaluate existing interagency coordination for stormwater management and water resources protection in anticipation of the Maryland Stormwater Management Act of 2007 and the National Pollutant Discharge Elimination System (NPDES) Municipal Separate Storm Sewer System (MS4) permit. These regulations require the County to identify means of implementing environmental site design (ESD) to the maximum extent practicable (MEP). The CWTF developed four priority recommendations in 2007, one of which relates specifically to ESD.

Based on the state's adoption of the Stormwater Management Act in May of 2009, the CWTF has identified, assessed, and recommended changes to remove barriers, gaps, and deficiencies in existing legislation/regulation/codes. This effort aims to encourage more effective and innovative planning, review, and implementation approaches to achieve water quality and watershed protection.

ESD uses on-site stormwater management practices to conserve or restore natural site hydrology. These features aim to achieve numerous stormwater goals, such as infiltrating and filtering as much runoff as possible, while also offering complimentary ecological, social, and economic benefits.

Biohabitats and Horsley Witten Group conducted a review of the Development Approval Process, selected Chapters of the Montgomery County Code, and the Commercial-Residential Zoning Text Amendment to identify potential impediments to ESD and begin developing recommendations for Code language changes. It should be noted that Chapter 19 (Erosion, Sediment Control and Storm Water Management) was not reviewed as part of this process and is not addressed in this report. Revisions to Chapter 19 are already occurring to comply with a separate timeline from MDE.

The application of ESD to the MEP will be determined during the development approval process (DAP). Recommended changes from the review of the DAP are to:

- Require applicants to attend a formal pre-application meeting.
- Require ESD practice locations as a base layer on all site plans reviewed during the DAP.
- Develop and adopt standard checklists and narrative requirements for ESD to the MEP.

As Code chapters were reviewed, specific sections that may be viewed as barriers, gaps, or opportunities were identified. Limited barriers to select or multiple ESD practices were identified in several Code chapters. The review is summarized in Table E-1.

Table E-1. Summary of General Findings	
Significant Barriers, Gaps, or Opportunities	Fewer but Important Barriers, Gaps, or Opportunities
<ul style="list-style-type: none"> <li>• Ch 59. Zoning</li> <li>• Development Approval Process</li> </ul>	<ul style="list-style-type: none"> <li>• Ch 22. Fire Safety Code</li> <li>• Ch 26. Housing and Building Maintenance Standards</li> <li>• Ch 49. Streets and Roads</li> <li>• Ch 50. Subdivision of Land</li> <li>• Commercial-Residential ZTA</li> </ul>
Limited Barriers, Gaps, or Opportunities	No Barriers or Gaps
<ul style="list-style-type: none"> <li>• Ch 8. Buildings</li> <li>• Ch 22A. Forest Conservation - Trees</li> <li>• Ch 40. Real Property</li> <li>• Ch 41. Recreation and Recreation Facilities</li> <li>• Ch 58. Weeds</li> <li>• Trees, Approved Technical Manual (MNCPPC)</li> </ul>	<ul style="list-style-type: none"> <li>• Chapter 14. Development Districts</li> <li>• Chapter 18A. Environmental Sustainability</li> <li>• Chapter 21. Fire and Rescue Services</li> <li>• Chapter 24B. Homeowners' Associations</li> <li>• Chapter 27A. Individual Water Supply and Sewage Disposal Facilities</li> <li>• Chapter 36. Pond Safety</li> <li>• Chapter 44. Schools and Camps</li> <li>• Chapter 45. Sewers, Sewage Disposal and Drainage</li> <li>• Chapter 54A. Transit Facilities</li> <li>• Chapter 56. Urban Renewal and Community Development</li> <li>• Guidelines for Environmental Management of Development in Montgomery County (Maryland National Capital Park and Planning Commission)</li> </ul>

Significant findings and recommendations include:

- Change existing terms found in the code to be consistent with ESD practice terms.
- Consider offering incentives of increased building height or density if a higher level of ESD is implemented.
- Increase the percent of green area required and include vegetated ESD practices as green area.
- Consider green roofs as green area on high density sites.
- Develop acceptable standards for permeable pavement and reinforced turf to replace existing streets, roads, sidewalks, parking, and other impervious surfaces.
- Implement ESD practices within street and road rights-of-way when possible to capture runoff from impervious surfaces.
- Consider ESD practices as methods for natural resource and environmental protection.
- Show ESD practices on landscape, site concept, and development plans.

- Reference ESD related definitions and requirements in Chapter 19 (Erosion, Sediment Control and Storm Water Management) as necessary throughout the Code.

A recently adopted Zoning Text Amendment (ZTA) establishes Commercial-Residential zones with the goal of enabling walkable, mixed-use communities that incorporate green design and convenient services. Comments include:

- The ZTA presents an opportunity to allow ESD within surface parking landscape area.
- A gap is created by the use of the term “stormwater management recharge facility” instead of ESD.

Next, the Montgomery County Department of Environmental Protection (DEP) will lead the effort to adopt the recommended changes to the County code. DEP will coordinate with the lead agencies for each Montgomery County Code chapter to promote and allow the use of ESD throughout the County.

## 1.0 Environmental Site Design (ESD)

### 1.1 Why Montgomery County is Focusing on ESD

#### 1.1.1 *Clean Water Task Force 2007 Commitment*

The Montgomery County Executive and Council President jointly established the Clean Water Task Force (CWTF) in May 2006 to evaluate existing interagency coordination for stormwater management and water resources protection. The Task Force includes representatives from the DEP, Department of Permitting Services (DPS), Department of Public Works and Transportation, Montgomery County Office of Management and Budget, County Council, Maryland-National Capital Park and Planning Commission (MNCPPC), the Washington Suburban Sanitary Commission, and Montgomery County Public Schools. Each agency is represented by key staff that has the authority to direct policy and budget decisions. These public agencies have either regulatory and review responsibilities related to stormwater management, or their operations or facilities produce or suffer potential significant impacts from stormwater runoff.

The first Task Force meeting took place on September 15, 2006. At this meeting, the Task Force agreed to develop by Spring 2007 recommendations for both short-term actions and long-term priorities for enhanced stormwater management and water resources protection in the County. Short-term recommendations are those that can be implemented without significant funding or staffing impacts. Long-term recommendations may require additional staff, funding, policy, or regulatory changes.

In Spring 2007, Task Force members identified and came to consensus on four priority recommendations that will have a high impact on stormwater management. One of the four recommendations relates specifically to ESD and is presented in Table 1.

#### 1.1.2 *SWM Act 2007 and NPDES MS4 Permit Requirement*

There are regional and state regulatory requirements to use ESD approaches for stormwater management to protect local and regional waters and aquatic resources. Montgomery County's new MS4 permit requires that the County identify means of promoting the implementation of ESD. Section E.1.b. of the permit states the following:

*Implement the stormwater management design policies, principles, methods, and practices found in the 2000 Maryland Stormwater Design Manual and the provision of Maryland's Stormwater Management Act of 2007 (Act). This includes, but is not limited to:*

- i. Within one year of State adoption of regulations required under the Act, modify the County stormwater management ordinance, regulations, and new*

*development plans review and approval processes in order to implement environmental site design (ESD) to the MEP;*

- ii. Within one year of State adoption of regulations required under the Act, review existing planning and zoning and public works ordinance and other local codes to identify impediments to, and opportunities for, promoting the implementation of environmental site design (ESD) to the MEP.*
- iii. Within two years of State adoption of regulations required under the Act, modify those ordinances and codes identified in Part III.E.b.ii. above to eliminate impediments to, and promote implementation of, ESD to the MEP; and*
- iv. Report annually the modifications that have or need to be made to all ordinances, regulations, and new development plans review and approval processes to accommodate the requirements of the Act.*

The State adopted regulations required under the Act on May 4, 2009. However, to address concerns regarding grandfathering, the difficulty of implementing ESD for redevelopment projects, and the impact on Smart Growth, MDE submitted a proposed emergency regulation to the Joint Committee on Administrative, Executive, and Legislative Review. The emergency regulation will allow a local jurisdiction to incorporate into its ordinance waiver provisions to address grandfathering of projects under certain conditions or when circumstances prevent the reasonable implementation of ESD to the MEP. The emergency regulation became effective on April 7, 2010 and will last for six months, during which time MDE must propose final regulation changes and provide for public input.

Table 1. CWTF Recommendation Relevant to ESD	
Identify, assess, and recommend changes to remove barriers, gaps, and deficiencies in existing legislation/regulation/codes and to encourage more effective and innovative planning, review, and implementation approaches to achieve water quality and watershed protection.	
Short-term	Develop a scope of work and cost-estimate for a third-party evaluation such as that used in the Roundtable process and in the Fairfax County Watershed Community Needs and Funding Options to identify, assess, and recommend changes to remove barriers, gaps, and deficiencies in existing legislation/regulation/codes and to encourage more innovative planning, review, and implementation approaches to achieve water quality and watershed protection.
Short-term	Develop a scope of work and cost-estimate for a consultant study for the investigation of a procedure to model the cumulative impact of development in the County and to determine current hydrologic and hydraulic impacts from existing developments. Also, the evaluation should include a procedure to analyze (and possibly mitigate) existing development, new development and/or redevelopment impacts on the storm drain system and/or streams in the County.
Long-term	By FY 09, obtain resources and initiate the third-party evaluation of the County's legislation/regulations/codes and the consultant study for cumulative impacts hydrology and hydraulic modeling.

Source: RESOLVE. 2007. Montgomery County Clean Water Task Force: Final Report and Recommendations to Montgomery County Executive and Council. Prepared for Montgomery County, Maryland. Washington, DC.

### 1.1.3 ESD is Innovative and Progressive

The ESD approach to development, redevelopment, and retrofitting is preferred because it conserves natural features and runoff patterns on a site and reduces pollutants entering the storm drains, stormwater management facilities, and local streams and other waterways.

## 1.2 Introduction to ESD

### 1.2.1 Processes and Practices

ESD is a comprehensive design strategy for maintaining predevelopment runoff characteristics and protecting natural resources. ESD relies on integrating site design, natural hydrology, and smaller scale stormwater management controls to capture and treat runoff. ESD utilizes many processes to manage stormwater and mimic natural hydrology, minimizing the impact of land development on water resources. ESD involves both *processes* and *practices*. These processes include:

- Optimizing conservation of natural features
- Minimizing impervious surfaces.
- Slowing runoff to maintain discharge timing and to increase infiltration and evapotranspiration
- Identifying potential locations for ESD practices early in the concept planning stage
- Concurrently planning for stormwater management, density, parking, fire and rescue, forest conservation, and other Code requirements

Maryland Department of the Environment (MDE) groups ESD practices into three categories: alternative surfaces, non-structural practices, and microscale practices (Table 2).

Table 2. Categories and Types of ESD Practices	
Alternative Surfaces	<ul style="list-style-type: none"> <li>• Green Roofs</li> <li>• Permeable Pavements</li> <li>• Reinforced Turf</li> </ul>
Non-Structural Practices	<ul style="list-style-type: none"> <li>• Disconnection of Rooftop Runoff</li> <li>• Disconnection of Non-Rooftop Runoff</li> <li>• Sheetflow to Conservation Areas</li> </ul>
Microscale Practices	<ul style="list-style-type: none"> <li>• Rainwater Harvesting</li> <li>• Submerged Gravel Wetlands</li> <li>• Landscape Infiltration</li> <li>• Infiltration Berms</li> <li>• Dry Wells</li> <li>• Micro-Bioretenention</li> <li>• Rain Gardens</li> <li>• Swales</li> <li>• Enhanced Filters</li> </ul>

These same ESD practices can also be categorized by their placement in the landscape (i.e., landscape position). Landscape positions with opportunities to implement ESD practices include rooftops, around buildings, streets and streetscapes, parking lots, walkways and other paved areas, and landscape (Table 3). These categories may facilitate integrating ESD into retrofit, redevelopment, and new development designs.

Table 3. Landscape Positions and ESD Practices	
Rooftops	<ul style="list-style-type: none"> <li>• Green Roofs</li> </ul>
Around Buildings	<ul style="list-style-type: none"> <li>• Disconnection of Rooftop Runoff</li> <li>• Rainwater Harvesting</li> <li>• Swales</li> <li>• Foundation planters</li> </ul>
Streets & Streetscapes	<ul style="list-style-type: none"> <li>• Permeable Pavements</li> <li>• Non-rooftop disconnection</li> <li>• Micro-Bioretenention</li> <li>• Swales</li> <li>• Stormwater Planters</li> <li>• Expanded Tree Pits</li> <li>• Stormwater Curb Extensions</li> <li>• Foundation Planters</li> </ul>
Parking Lots	<ul style="list-style-type: none"> <li>• Permeable Pavements</li> <li>• Non-rooftop disconnection</li> <li>• Reinforced Turf</li> <li>• Micro-bioretenention</li> <li>• Swales</li> </ul>
Walkways & Other Paved Areas	<ul style="list-style-type: none"> <li>• Permeable Pavements</li> </ul>
Landscape	<ul style="list-style-type: none"> <li>• Sheetflow to Conservation Areas</li> <li>• Submerged Gravel Wetlands</li> <li>• Landscape Infiltration</li> <li>• Micro-Bioretenention</li> <li>• Rain Gardens</li> <li>• Swales</li> <li>• Soil Compost Amendments</li> </ul>

### 1.2.2 Benefits of ESD

When designed, constructed, and maintained effectively, ESD achieves numerous stormwater management goals as well as other complimentary ecological, social, and economic benefits. ESD practices primarily serve the function of slowing, infiltration, evapotranspiring, and filtering stormwater on-site. Reducing or eliminating stormwater runoff from a site to adjacent impervious surfaces or storm sewer systems benefits the watershed as a whole by reducing pollutant loading and erosion from fast-moving runoff into waterways. Additionally, ESD practices can protect and provide habitat through valuing the stormwater services provided by trees and other vegetation. Replacing impervious surfaces with trees and other vegetation can also reduce urban heat island effects, in turn saving energy and improving human comfort. Trees and vegetation used in ESD, compared with typical urban stormwater conveyance infrastructure can sequester carbon and improve air quality. The aesthetic appeal of adding vegetated areas to an urban environment has been shown through multiple

studies to benefit human health and well-being as well as increase property values and attractiveness to shoppers.

### **1.2.3 Common Issues and Concerns Associated with ESD**

#### *Road code*

Biohabitats and Horsley Witten Group found some gaps but no barriers to ESD practices in the Road Code. As there are no significant impediments to ESD and the Road Code recently undertook a consensus-based review process, there is no need to re-open the Road Code again for this effort.

#### *ESD and trees*

Trees are an integral element of many ESD practices. Concerns about species of trees which could tolerate road salt and pollutants were issues during the stakeholder comment process. Altering existing street tree planting palettes or adding ESD into right-of-ways as additional space beyond typical street trees were also concerns.

There are actually many native tree species which are both well-suited for street tree and roadside conditions and tolerant of salt. Some of these include:

- Serviceberry (*Amelanchier canadensis*.)
- Honeylocust (*Gleditsia triacanthos* var. *inermis*)
- Kentucky Coffeetree (*Gymnocladus dioica*)
- Witchhazel (*Hamamelis* spp.)
- Eastern Redcedar (*Juniperus virginiana*)
- Sweetbay Magnolia (*Magnolia virginiana*)
- Black Gum (*Nyssa sylvatica*)
- White Oak (*Quercus alba*)
- Red Oak (*Quercus rubra*)

Areas that would otherwise be ornamentally landscaped provide opportunities to combine landscaping with ESD practices. When planting trees in urban areas, consideration must be given for adequate soil volumes to maintain tree health.

#### *Fire and rescue service and reinforced turf*

Fire and Rescue Service (FRS) has some basic requirements for their equipment to ensure fire and rescue safety. These access-ways must be at least twenty feet wide and bear specific loads – potentially adding to impervious surface. There are a few reinforced turf products which can bear the appropriate loads while maintaining the

appearance and permeability of a lawn. FRS is in the process of testing some of these products in order to determine a pre-approved list.

#### *WSSC plumbing code versus rainwater re-use*

WSSC does not specifically prohibit the re-use of rainwater collected in cisterns for indoor, non-potable reuse (such as for toilet flushing). However, they have yet to permit such a system, have no standard for designers, and require metering, filtration, and backflow prevention of this rainwater. Metering would help account for the load on wastewater treatment plants. Although rainwater in an opaque cistern would not grow algae and would not require the same filtration as greywater, WSSC would currently require treatment of rainwater as if it was greywater before reuse. All of these requirements effectively make approval of a rainwater harvesting system for indoor reuse infeasible. However, rainwater harvesting for outdoor uses such as irrigation does not require WSSC permitting and is still a valuable ESD practice for stormwater management.

#### *Combining ESD with other green design: green roofs and solar energy*

ESD practices do not limit other green design practices and can be combined to maximize both stormwater management and other systems, such as energy. For example, green roofs work very well in combination with solar panels. Both require access to the roof for maintenance. Most solar roof installations do not occupy the entire roof area, leaving room for both systems. Attention should be given to what type of plant material is selected for this type of hybrid roof to ensure that shade tolerant species are planted under the panels and that the height of the vegetation does not shade the panels. Solar panels on green roofs can be mounted on aluminum frames to raise them above the vegetation as well. Solar panels can also be designed so that there are breaks in the line of panels where rainwater can flow through.

#### *Inspection and maintenance*

DEP will be accountable for ESD facility inspections and ensuring maintenance is completed. DEP will keep an inventory of ESD practices in Montgomery County including schools but excluding individual jurisdictions (Rockville, Gaithersburg, and Takoma Park). DEP is discussing developing maintenance programs for ESD practices. There will be access requirements for ESD practices on private property so that DEP staff can perform inspections. DEP is currently looking into the types of easement and maintenance agreements the County will need for ESD practices. The County's current program focuses on maintenance of the structural components of stormwater practices. DEP is looking at how to define "structural" in terms of ESD practices, and is currently finishing a vegetated facilities maintenance policy. As DEP develops maintenance and inspection policies, they will be available for agency comment. DEP is also designing a program to train homeowner associations (HOAs) and contractors to maintain ESD practices.

## 2.0 Programmatic Implementation

### 2.1 Defining Maximum Extent Practicable (MEP)

As a regulating entity, the County is responsible for reviewing and approving site development applications for proposed new development and redevelopment. The majority of applicants are private sector developers and the County review is done in the context of meeting the State and County stormwater management and Erosion and Sediment Control regulations and requirements. With the new stormwater management regulations, ESD and MEP are fairly narrowly defined for the cases of new development and redevelopment applications.

The MDE stormwater regulations (COMAR 26.17.02) define ESD and MEP as follows:

*ESD: using small-scale stormwater management practices, non-structural techniques, and better site planning to mimic natural hydrologic runoff characteristics and minimize the impact on land development on water resources*

*MEP: designing stormwater management systems so that all reasonable opportunities for using ESD planning techniques and treatment practices are exhausted and, only where absolutely necessary, a structural BMP is implemented.*

Operationally, ESD is primarily a technological standard requiring the use of certain ESD practices, as defined in the new Chapter 5 of the Maryland Stormwater Design Manual. MEP is primarily a hydrologic performance standard that uses post-development curve numbers (CN) to ensure that discharge rates are equivalent to predevelopment “woods in good condition” rate for storm events ranging from the water quality volume (WQv) up to the Channel Protection volume (CPv).

For development, MEP for ESD practices is defined as using these practices to capture a minimum runoff volume (up to the water quality volume), and preferably a maximum runoff volume (the entire channel protection storm event).

### 2.2 MEP Determination during the Development Approval Process

In Montgomery County, MEP determination for a new development or redevelopment project will be integrated into the Development Approval Process (DAP). As modifications to the DAP are made to account for this, the following should be considered:

- MEP determination should be different for new development and redevelopment.

- Desired density set forth by master plans and sector plans should be factored into MEP determination.
- MEP determination will require early coordination across agencies involved in the DAP.
- As lead agency, MEP determination will ultimately be made by the DPS.
- A checklist to be completed by the applicant and reviewed by DPS may help to ensure equitability in MEP determination.
- Documentation of the MEP determination for every new development and redevelopment project is essential.

## **2.3 Recommended Modifications to the Development Approval Process**

The DAP was also reviewed as part of this effort. This review is based on meetings and discussions with DEP and DPS staff; attendance at a Development Review Committee (DRC) meeting; attendance at an internal departmental meeting to discuss ideas for streamlining the overall development review process; review of a DAP workbook that outlines different types of subdivision review; review of the County's Manual of Development Review Procedures; review of various guidance documents, applications, and checklists on the DPS and MNCPPC websites; and review of recommendations set forth by the Clean Water Task Force.

During this review, the following major barriers or gaps to ESD were identified within the DAP:

- With the exception of development proposed within Special Protection Areas, stormwater management is not formally introduced into the DAP until many site elements have been laid out, such as roads and lot lines. However, applicants that have prior experience with the County's DAP typically initiate preliminary discussions with various review agencies on site requirements and considerations, including stormwater management.
- Site plans and details submitted to different agencies for review do not always show the proposed locations of stormwater BMPs. As such, competing concerns and priorities associated with other site design elements, such as roads and fire safety, may not take into account areas required for stormwater management.
- Rezoning applications are often required to provide a detailed concept plan early in the DAP, which precedes review and thorough consideration of stormwater management by DPS.
- The Natural Resources Inventory / Forest Stand Delineation (NRI/FSD) does not identify areas on a development site that may be appropriate locations for stormwater management (e.g., soils with high infiltration capabilities).

Preliminary recommendations for enhancing or modifying the DAP to promote implementation of ESD include:

- Require applicants to attend a formal pre-application meeting with County agencies to review and discuss preliminary plans and applicable requirements for development at the site. This may be conducted by the Development Review Committee. DPS involvement is critical to ensure that stormwater management, and ESD in particular, is discussed and considered early in the process.
- Require ESD practice locations as a base layer on all site plans reviewed by various agencies during the DAP.
- Develop and adopt standard checklists and narrative requirements that are used by applicants to demonstrate application of ESD to the MEP at a site.

It should be noted that the Planning Department has convened a working group to review the DAP with the goals of reducing the number of required meetings; improving the resolution process for conflicts between County agencies on development review issues; and better defining the role of lead agencies in the DAP.

## **2.4 Interagency Coordination Beyond the DAP**

**UNDER DEVELOPMENT, SEE ATTACHMENT A**

### 3.0 Findings and Recommendations Related to the Montgomery County Code

#### 3.1 Overview of the Code Review Process and Agency Review

Biohabitats and Horsley Witten Group conducted a review of selected Chapters of the Montgomery County Code, the Development Approval Process, and the Commercial-Residential Zoning Text Amendment. The goals of this review were to familiarize our team with development-related chapters of the Code; to identify potential impediments to ESD within the Code; to identify potential impediments to ESD within the Development Approval Process; and to begin to develop preliminary recommendations for Code language changes. In addition, Montgomery County's renewal MS4 permit, Section E.1(ii), states the following:

*Within one year of State adoption of regulations required under the Act, review existing planning and zoning and public works ordinance and other local codes to identify impediments to, and opportunities for, promoting the implementation of environmental site design (ESD) to the MEP.*

The Code review is viewed as the first step towards compliance with this permit requirement.

The Code review is structured around an expanded list of ESD practices:

- Green Roofs
- Permeable Pavements
- Reinforced Turf
- Disconnection of Rooftop Runoff
- Disconnection of Non-Rooftop Runoff
- Sheetflow to Conservation Areas
- Rainwater Harvesting
- Submerged Gravel Wetlands
- Landscape Infiltration
- Infiltration Berms
- Dry Wells
- Micro-Bioretenion
- Rain Gardens
- Swales
- Enhanced Filters
- Soil Compost Amendments
- Stormwater Planters
- Expanded Tree Pits
- Stormwater Curb Extensions
- Foundation Planters

Although noted as a possible Code review template by the Montgomery County Clean Water Task Force, the Code and Ordinance Worksheet (Center for Watershed Protection, 1998) was not used. The Code and Ordinance Worksheet, or COW, does not provide enough structure to determine if barriers exist that will impede the application of specific ESD practices. Instead, selected chapters of the Montgomery County Code were reviewed in the context of the ESD practice guidance provided in the new Chapter

5 of the Maryland Stormwater Design Manual (Table 4). It should be noted that Chapter 19 (Erosion, Sediment Control and Storm Water Management) was not reviewed as part of this process and is not addressed in this report. Revisions to Chapter 19 are already occurring to comply with a separate timeline from MDE.

**Table 4. Montgomery County Code Chapters and Other Documents Reviewed**

**Montgomery County Code Chapters:**

- Chapter 8. Buildings
- Chapter 14. Development Districts
- Chapter 18A. Environmental Sustainability
- Chapter 21. Fire and Rescue Services
- Chapter 22. Fire Safety Code
- Chapter 22A. Forest Conservation - Trees
- Chapter 24B. Homeowners' Associations
- Chapter 26. Housing and Building Maintenance Standards
- Chapter 27A. Individual Water Supply and Sewage Disposal Facilities
- Chapter 36. Pond Safety
- Chapter 40. Real Property
- Chapter 41. Recreation and Recreation Facilities
- Chapter 44. Schools and Camps
- Chapter 45. Sewers, Sewage Disposal and Drainage
- Chapter 49. Streets and Roads
- Chapter 50. Subdivision of Land
- Chapter 54A. Transit Facilities
- Chapter 56. Urban Renewal and Community Development
- Chapter 58. Weeds
- Chapter 59. Zoning

**Other Relevant Documents:**

- Guidelines for Environmental Management of Development in Montgomery County (Maryland National Capital Park and Planning Commission)
- Trees, Approved Technical Manual (Maryland National Capital Park and Planning Commission)
- Commercial-Residential ZTA
- Development Approval Process

As the Code chapters were reviewed, specific sections that may be viewed as barriers, gaps, or opportunities were identified. *Barriers* are impediments to ESD and are typically found when a specific planning or design requirement is counter to one or more ESD practice design requirements. *Gaps* are less obvious. Due to a lack of detail in the Code, these are subject to interpretation and may serve as impediments in certain situations. *Opportunities* are sections that promote or have the potential to promote ESD. In some of these cases, expanded language that references ESD is recommended.

The CWTF met on February 1, 2010 and March 1, 2010 to review and discuss findings and recommendations of the initial draft Code review. Documentation of these

meetings is provided in Attachment B. The general findings and recommendations in Section 3.2, and the detailed findings and recommendations in Attachment C, reflect comments and input from the CWTF members.

### 3.2 General Findings and Recommendations

Limited barriers to select or multiple ESD practices were identified in several Code chapters, as displayed in Table 5. The Development Approval Process, the Commercial-Residential ZTA, and Chapter 59 (Zoning) contain multiple barriers and gaps related to implementation of ESD. However, multiple opportunities were also noted where language may be enhanced to encourage application of ESD practices.

The accompanying Microsoft Excel workbook (Attachment C) provides documentation of the review. It should be noted that Chapter 49 (Streets and Roads) was reviewed in the context of the Road Code Stakeholder Work Group background reports. We are not recommending reopening Chapter 49. Subsequent to the Road Code, an informal working group, which included both agency and non-agency participants, continued to discuss issues related to street trees and their use for stormwater management. A summary of their subsequent discussions is included as Attachment D (to be added to next draft of this report). More recently, Environmental Planning has convened a group to begin working more specifically on street trees and stormwater. This group will be examining what else is taking place around the country and applicability to Montgomery County. For example, the City of Portland has updated its Green Streets standards to better represent street tree details and landscape templates that avoid utility conflicts (such as with power lines) but promote survival.

It should also be noted that the County does not currently have a grading ordinance. This may be considered as part of a broader Chapter 19 (Erosion, Sediment Control and Storm Water Management) re-evaluation at a later date.

Significant findings and recommendations include:

- Change existing terms found in the code to be consistent with ESD practice terms.
- Consider offering incentives of increased building height or density if a higher level of ESD is implemented.
- Increase the percent of green area required and include vegetated ESD practices as green area.
- Consider green roofs as green area on high density sites.
- Develop acceptable standards for permeable pavement and reinforced turf to replace existing streets, roads, sidewalks, parking, and other impervious surfaces.

- Implement ESD practices within street and road rights-of-way when possible to capture runoff from impervious surfaces.
- Consider ESD practices as methods for natural resource and environmental protection.
- Show ESD practices on landscape, site concept, and development plans.
- Reference ESD related definitions and requirements in Chapter 19 (Erosion, Sediment Control and Storm Water Management) as necessary throughout the Code.

**Table 5. Summary of General Findings**

Significant Barriers, Gaps, or Opportunities	Fewer but Important Barriers, Gaps, or Opportunities
<ul style="list-style-type: none"> <li>• Ch 59. Zoning</li> <li>• Development Approval Process</li> </ul>	<ul style="list-style-type: none"> <li>• Ch 22. Fire Safety Code</li> <li>• Ch 26. Housing and Building Maintenance Standards</li> <li>• Ch 49. Streets and Roads</li> <li>• Ch 50. Subdivision of Land</li> <li>• Commercial-Residential ZTA</li> </ul>
Limited Barriers, Gaps, or Opportunities	No Barriers or Gaps
<ul style="list-style-type: none"> <li>• Ch 8. Buildings</li> <li>• Ch 22A. Forest Conservation - Trees</li> <li>• Ch 40. Real Property</li> <li>• Ch 41. Recreation and Recreation Facilities</li> <li>• Ch 58. Weeds</li> <li>• Trees, Approved Technical Manual (MNCPPC)</li> </ul>	<ul style="list-style-type: none"> <li>• Chapter 14. Development Districts</li> <li>• Chapter 18A. Environmental Sustainability</li> <li>• Chapter 21. Fire and Rescue Services</li> <li>• Chapter 24B. Homeowners' Associations</li> <li>• Chapter 27A. Individual Water Supply and Sewage Disposal Facilities</li> <li>• Chapter 36. Pond Safety</li> <li>• Chapter 44. Schools and Camps</li> <li>• Chapter 45. Sewers, Sewage Disposal and Drainage</li> <li>• Chapter 54A. Transit Facilities</li> <li>• Chapter 56. Urban Renewal and Community Development</li> <li>• Guidelines for Environmental Management of Development in Montgomery County (Maryland National Capital Park and Planning Commission)</li> </ul>

The specific recommendations were ranked into three categories based on CWTF comments: necessary and easily implemented; necessary but difficult to implement code changes; and no consensus on necessity of implementation and needs more discussion. The preliminary recommended code changes are summarized in Sections 3.2.1 through 3.2.3. In addition, more detail on the findings and recommendations related to Chapter 59 (Zoning) and the Commercial-Residential ZTA are provided in Sections 3.2.4 and 3.2.5.

### 3.2.1 Consensus - Necessary and Easily Implemented Code Changes

There was consensus from the CWTF that the code review recommendations listed in Table 6 need to be implemented and are easy to implement.

**Table 6. Necessary and Easily Implemented Code Changes**

Chapter, Section	Comment Type	Topic	Preliminary Recommended Changes
<b>Chapter 8. Buildings</b>			
8 - 8.29B	Gap & Opportunity	Safe conveyance of stormwater	This relates to all ESD practices. Change terms in this section to match ESD practice terms and include any special considerations for practices.
8 - 8.42 & 8.49	Opportunity	LEED Silver requirement	Encourage using ESD practices which also qualify for LEED credits (SS 6.1 & 6.2 Stormwater Design, SS 7.1 & 7.2 Heat Island Effect, etc.).
<b>Chapter 18. Environmental Sustainability</b>			
18 - 18A	Opportunity	Building insulation & energy efficiency	Consider incentives and loan fund eligibility for green roofs for their reduction of building cooling energy demands.
<b>Chapter 22. Fire Safety</b>			
22 - 22.98	Barrier	Green roof class rating	Identify green roofs as a different and allowable fire safety class rating but take vegetation type and roof accessibility into account.
<b>Chapter 26. Housing and Building Maintenance Standards</b>			
26 - 2 & 5	Barrier / Gap	Nuisance definition	Avoid inclusion of ESD practices as nuisance through standards which prevent basement flooding or inappropriate ponding.
<b>Chapter 40. Real Property</b>			
40 - Article III.	Gap	Sale of real property	Include on-lot ESD practices in property sale disclosures, require seller to get an inspection/certification by a PE, and provide maintenance requirements.
<b>Chapter 41. Recreational and Recreation Facilities</b>			
41 - 18	Barrier	Physical standards	Consider stating that stormwater systems should be ESD designed based on Chapter 19.
<b>Chapter 49. Streets and Roads (no recommendation to re-open the road code)</b>			
49 - 3	Opportunity	Landscape planting	Include micro-bioretenment and other vegetated ESD as planting.
49 - 5	Opportunity	Right to properly drain	Include ESD as drainage.
49 - 30	Opportunity	Traffic calming	Traffic calming designs could also act as ESD areas.
49 - 78	Opportunity	Rustic roads	Encourage protection and restoration of native vegetation with minimized impervious surface.

**Table 6. Necessary and Easily Implemented Code Changes**

Chapter, Section	Comment Type	Topic	Preliminary Recommended Changes
<b>Chapter 50. Subdivision of Land</b>			
50 - 25	Barrier	Limits light rail	Remove “prohibit” from language and consider light rail within ROW where it would decrease the demand for impervious streets and roads.
<b>Chapter 58. Weeds</b>			
58 - all	Barrier	Invasive plant removal	Ensure ESD vegetation is not perceived as a non-managed area.
<b>Chapter 59. Zoning</b>			
59 - A.1.73.	Opportunity	Air rights and ROWs	Allow green roofs, and living walls within ROW air rights and underground rainwater harvesting cisterns underground in ROWs.
59 - A.2.1 & B.1.1	Opportunity/ Barrier	Building height, allowable roof items	Allow buildings to exceed maximum height if due to green roof structure or vegetation; add green roofs and associated structures or vegetation to allowable roof items.
59 - B.3.1	Opportunity/ Barrier	Steps, terraces, and porches	Allow greater extension of structures into yard if accommodating rainwater harvesting.
59 - C.1.325	Gap/ Opportunity	Lot distance from street	Consider increasing if necessary to accommodate ESD such as a rain garden.
59 - C.1.326	Opportunity	Accessory buildings	Allow accessory structures for rainwater harvesting as an exception.
59 - C.1.524	Opportunity	Common open space	Intensive green roofs could be common open space in dense areas.
59 - C.1.627	Opportunity	Green area	Allow green roofs as green area in dense development.
59 - C.2.1	Opportunity	Roads	Encourage roads to use permeable pavement
59 - C.3.72	Barrier	Street width	Street width should be allowed to widen to accommodate ESD practices
59 - C.5.434	Barrier	Enclosed building and storage	Allow permanent cisterns and rain barrels for rainwater harvesting.
59 - C.5.4391	Opportunity	Sound environmental practices	Include ESD as part of the definition of “sound environmental practices.”
59 - C.7.58	Opportunity	Parking	Include enhanced filters (with soil standard) in landscaping requirement for parking; define “appropriately landscaped.”
59 - C.7, D.1	Opportunity	Site plan, concept plan, & development plan	Include ESD in site plan, concept plan, and development plan.
59 - D.2.6	Opportunity	Amendment	Allow ESD to be a minor amendment.
59 - D.4.3	Opportunity	Diagrammatic plan	Consider runoff potential of existing characteristics and recommend ESD.
59 - E.2.5	Opportunity	Drainage	Include ESD in drainage.

### 3.2.2 Consensus - Necessary but Difficult to Implement Code Changes

There was consensus from the CWTF that the code review recommendations listed in Table 7 are necessary but may be difficult to implement.

**Table 7. Necessary but Difficult to Implement Code Changes**

Chapter, Section	Comment Type	Topic	Preliminary Recommended Changes
<b>Chapter 8. Buildings</b>			
8 - 29B	Opportunity	Dry wells, infiltration berms, and stormwater planters	Change terms used to “dry well”, infiltration berm”, and “stormwater planter”.
<b>Chapter 18. Environmental Sustainability</b>			
18 - 14	Opportunity	Increasing tree canopy	Encourage increasing green roof coverage in addition to increasing tree canopy.
<b>Chapter 22. Fire Safety</b>			
22 - all	Gap	Permeable pavement	Develop a list of pre-approved permeable pavement and reinforced turf options to add to this chapter.
22 - 22.40	Barrier	Emergency access	Allow rainwater harvesting cisterns and rain barrels but recommend narrow or underground versions where they may block emergency access.
<b>Chapter 26. Housing and Building Maintenance Standards</b>			
26 - 9 & 10	Gap / Opportunity	Roof and paved surface drainage	Review during building code review and stormwater approval to ensure proper site analysis, design, construction, and maintenance to avoid damage to structures. Develop a maintenance protocol for all ESD practices in Chapter 19 and reference.
<b>Chapter 49. Streets and Roads (no recommendation to re-open the road code)</b>			
49-3	Barrier	Definitions of pavement and curb and gutter	Add definitions which include permeable pavement and reinforced turf under definition of pavement and curb cuts for micro-bioretenention and other ESD practices for curb and gutters.
49 - 26	Opportunity	Definition of vegetation types	Reference Chapter 22A for forest conservation; include heights up to 12” in definition of ground covers; reference street tree standards; include vegetated ESD
49 - 40	Opportunity	Surface treatments	Suggest waiving requirements for typical surface and drainage improvements to encourage ESD retrofits.
49 - 45	Opportunity	Land acquisition	Use authority to acquire land for ESD retrofits.
<b>Chapter 50. Subdivision of Land</b>			
50 - 24	Barrier	Drainage standards	Consider waver from proper agency when drainage standard conflicts with ESD

**Table 7. Necessary but Difficult to Implement Code Changes**

Chapter, Section	Comment Type	Topic	Preliminary Recommended Changes
50 - 25, 59 - C.1.353, C.7.37, & C.7.482	Barrier	Parallel streets, reservation of land	Recommend disconnection of impervious surfaces created by streets to ESD practices.
<b>Chapter 59. Zoning</b>			
59 - A.2.1	Opportunity	Definitions	Include definitions for ESD practices and reference State and County stormwater management regulations.
59 - C.1.327	Barrier	Maximum building height	Allow greater building heights with inclusion of green roofs or with a smaller footprint and increased green space.
59 - C.1.5.55, C.7, & E	Opportunity/ barrier	Parking	Minimize impervious parking through change to maximum or median requirement and specify application of ESD practices to parking areas.
59 - C.1.5.7 & C.7.14	Opportunity	Dense development	Add all ESD practices to list of features which qualify for incentive density or provide option to increase density if highest ESD standard is met.
59 - C.2.444 & C.7.71	Opportunity	Natural resources & environmental protection	Include ESD as method of natural resources and environmental protection.
59 - C.3.73	Opportunity	Pedestrian ways	Use permeable pavement and reinforced turf for pedestrian ways.
59 - C.4.311, C.7, & E.2.73	Gap	Green area & open space	Increase minimum green area (depending on development type) to allow for ESD (consider green roofs green space in high density) and include ESD in green areas and open space for function and amenity.
59 0 C.5.21, C.7.133, & C.7.422	Opportunity	Allowable use	Include ESD practices as allowable uses for all zones/properties.
59 - C.5.322	Opportunity	Landscape plan	Include ESD in landscape plan.
59 - C.5.46	Opportunity	Environmental control for industrial zones	Recommend ESD as preferable method of stormwater management.
59 - C.5 & 6	Opportunity	Development standards	Encourage green roofs and above or below ground rainwater harvesting cisterns on high density sites and below-grade parking.
59 - C.6.24	Gap	Existing buildings	Allow changes to building and fire code for ESD retrofits.
59 - E.2.7	Barrier	Landscaping	Include ESD in landscaping category.

**Table 7. Necessary but Difficult to Implement Code Changes**

Chapter, Section	Comment Type	Topic	Preliminary Recommended Changes
59 - E	Opportunity / Gap	Tree health	Evaluate spacing, adapted species, and soil in landscape area ESD practices with trees for tree health.
59 - E.2.75 & E.4.4	Gap	Native plant material	Specify a target percentage of plant material in ESD to be native species with incentive for larger percent.
59 - general	Opportunity	ESD standards	Add special sections for ESD guidelines and design standards; consider lists of ESD practices based on building size; consider incentivizing ESD practices with increased height and/or density allowances.
<b>Trees Approved Technical Manual</b>			
General	Opportunity / Gap	Afforestation	Include ESD practices with trees as a method to retain urban and suburban trees to meet afforestation requirements.

### 3.2.3 No Consensus on Necessity of Implementation and Needs More Discussion

There was no consensus of the CWTF regarding the necessity or ease of implementation of the recommendations listed in Table 8.

**Table 8. No Consensus on Necessity of Implementation and Needs More Discussion**

Chapter, Section	Comment Type	Topic	Preliminary Recommended Changes
<b>Chapter 26. Housing and Building Maintenance Standards</b>			
26 - 6	Barrier	WSSC standards	Revise WSSC standards to allow indoor re-use of harvested rainwater and determine any other barriers to ESD practices
<b>Chapter 49. Streets and Roads (no recommendation to re-open the road code)</b>			
49 - 3	Opportunity	Medians	Include trees and other plantings in the median.
49 - 33	Opportunity/ Gap	Right-of-ways	Include ESD in ROW with emphasis on vegetated practices.
<b>Chapter 59. Zoning</b>			
59 - C.1.34.	Opportunity	Green area	Consider vegetated ESD practices as green area (including green roofs).
59 - C.1.353	Opportunity	Interior streets	Encourage interior streets to use permeable pavement.
59 - C.1.5.53 & E.2.71	Opportunity	Streetscape	Encourage ESD in streetscapes.
59 - C.2.21	Opportunity	Roads	Encourage interior street drainage to ESD practices with trees.
59 - E.2	Opportunity / Gap	Plans and design standards	Encourage ESD in plans and design standards

### **3.2.4 Chapter 59 Zoning**

There are eight articles in Chapter 59: Article 59-A. In General, Article 59-B. Exemption From Controls, Article 59-C. Zoning Districts; Regulations, Article 59-D. Zoning Districts-Approval Procedures, Article 59-E. Off-Street Parking and Loading, Article 59-F. Signs, Article 59-G. Special Exceptions, Variances, and Nonconforming Uses, and Article 59-H. Amendment Procedures.

Many areas of Chapter 59 offer opportunities for inclusion of ESD practices while many also create potential barriers or are deficient in addressing ESD. Generally, ESD features could be represented where applicable within definition lists, in permit application plan submissions, as “Green Area”, and as “Open Space”. ESD should also be discussed as integral to any environmental development standards, as in Section 59-C-1.5 Cluster Development. These situations are repeated through many of the various articles.

Although ESD applications related to streets and roads are discussed in more detail in Chapter 49, there are many references to these within Zoning, especially related to smaller neighborhood roads, streetscapes, and parking lots. Stormwater runoff from all of these typically impervious surface areas should be treated using one of the appropriate ESD practices.

All zone widths and setback codes should be reconsidered if they could potentially discourage ESD designs such as rain gardens, bioretention, swales, expanded tree pits, or others.

As ESD areas could be considered “Green Area” and “Landscape”, terms mentioned extensively in Article C as well as D and E, the minimum required area could be expanded to minimize impervious surfaces and allow for more ESD area.

Many sections of Articles A, B, and C discuss code relevant to green roofs. Sections related to air rights (A-1.73), building heights (A-5.42, C-1.327, C-4.311), and allowable rooftop items (B-1.1) could all be revised to allow for and encourage green roofs. Green roofs could also be incentivized through increasing allowable building height. In high density development, green roofs could be considered as “Green Area” for their value in stormwater management, habitat creation (for birds and insects), and for recreation if accessible as usable space.

There is opportunity to encourage the use of permeable pavement or reinforced turf where typical impervious surfaces, such as walkways and parking facilities are listed within the zoning code, especially within Article C. Permeable pavement could be used for any of these surfaces while reinforced turf would be more appropriate for less intensely used surfaces such as overflow parking. These same impervious surface areas could also be disconnected from centralized drainage infrastructure by directing runoff into various forms of ESD infiltration, bioretention, or storage areas.

Where applicable, development areas adjacent to conservation areas could be encouraged to direct drainage into conservation areas as long as there are protective measures to prevent degradation of the preserved area.

Rainwater harvesting, including above or below ground barrels or cisterns, could be encouraged through revisions to sections within Articles A, B, and C. There is an opportunity to install below ground cisterns in Right of Ways (A-1.73), above ground barrels or cisterns in conjunction with steps, terraces, and porches in yards (B-3.1, C-1.326), and within inner courts or storage structures within buildings (C-2.415, C-5.434). However, it is understood that plumbing codes are an impediment as they limit the use of harvested rainwater to landscape irrigation.

Landscape infiltration, micro bioretention, rain gardens, and swales could all be specifically encouraged through revisions to Articles C and E. Minimum sizes of planting islands and other landscaping areas should be large enough to allow for these ESD practices, accommodating the drainage from surrounding impervious surfaces. When these ESDs include trees as part of bioretention planting, soil areas should be allowed enough width to support tree health.

Articles C and E have a few points of opportunity and potential barrier for stormwater planters, expanded tree pits, and stormwater curb extension.

Article E presents potentially significant barriers to ESD. First, surface parking requirements are set as minimum requirements. To reduce impervious cover associated with surface parking, a shift to maximum or median requirements should be considered. Second, surface parking landscaping requirements do not specify that ESD practices are allowable within required landscaping areas.

Montgomery County recently initiated a Zoning Code Rewrite process. As this process proceeds, coordination will be necessary to ensure that future Zoning Code changes do not create new impediments to ESD implementation.

To date, an in-house diagnosis of the zoning code was created based on about eight months of staff analysis of the current code. The result of this diagnosis is the Zoning Discovery, a report that not only analyzes the strengths and weaknesses of the code, but proposes direction and goals for a new Code. The Discovery was published in January 2009. It includes input from stakeholders that were invited to a series of small group discussions to share their thoughts on the current code and ideas for a revised code.

The consultant team, Code Studio, began work in July 2009, and a project initiation visit was held in late September. A draft project approach report and an annotated outline was submitted in January 2010. Based on Council action, a final project approach will set

the foundation for the course of the rewrite. It is expected a public draft of the Code will be completed by the fall of 2011. In that time period there will be opportunities for sharing drafts with interested parties. Attachment F contains an excerpt of the sustainability audit developed as part of this process that focuses on stormwater related recommendations.

### **3.2.5 Commercial-Residential Zoning Text Amendment**

A recently adopted Zoning Text Amendment (ZTA) establishes Commercial-Residential zones with the goal of enabling walkable, mixed-use communities that incorporate green design and convenient services. Comments are summarized below.

#### *59-C-15.65. Parking.*

The minimum landscape standards for surface parking allow for the placement of stormwater management recharge facilities within required landscape areas. Allowing for stormwater management within required surface parking landscaping is an *opportunity* that will promote ESD. However, use of the term “stormwater management recharge facility” is a *gap*. The term is not defined, and it is not consistent with language used in Chapter 5 of the Maryland Stormwater Manual. In addition, the ability to recharge stormwater runoff is highly dependent on site conditions and it may not be feasible to infiltrate runoff within locations designated for surface parking landscaping. However, other ESD practices may be feasible within these locations, such as micro-bioretenention. Consider replacing the term “stormwater management recharge facility” with “ESD practice.”

## 4.0 Next Steps: Making County Code Changes

After completing a review of existing ordinances and codes to identify impediments to, and opportunities for, promoting the implementation of ESD to the MEP, Montgomery County must modify the identified codes. The County's MS4 permit states that the code modification must occur "within two years of State adoption of regulations under the act" which means the modifications are required by May 4, 2011.

In coordination with the appropriate County agencies, DEP will draft the legislation changes. There is a multi-step approval process for making County Code changes. This process is listed below.

- 1) Obtain internal departmental approval (sign offs). DEP will coordinate with the lead agency shown in Table 9 responsible for each Code chapter to prepare draft changes to the legislation.

Table 9. Lead Agencies for Code Revisions	
Chapter	Lead Agency
Ch 8. Buildings	DPS
Ch 22. Fire Safety Code	Fire and Rescue Services (FRS)
Ch 22A. Forest Conservation - Trees	MNCPPC
Ch 26. Housing and Building Maintenance Standards	Department of Housing and Community Affairs (DHCA)
Ch 40. Real Property	Office of Consumer Protection (OCP)
Ch 41. Recreation and Recreation Facilities	
Ch 49. Streets and Roads	Department of Transportation (DOT)
Ch 50. Subdivision of Land	DPS
Ch 58. Weeds	DHCA
Ch 59. Zoning	MNCPPC (coordinate with ongoing review and Code update)

- 2) The County Attorney for the lead agency reviews draft language for legality.
- 3) The Lead agency submits bill to the County Executive (with the associated documents, transmittal memos, etc.) for concurrence and transmittal to the County Council for consideration.

- 4) The Council process includes public hearings and assignment to a committee for review and recommendations prior to final adoption. The Council may amend the legislation prior to adoption.

The DEP will lead the effort to adopt the recommended changes to the County Code which have been identified by consensus as easy to implement. For recommended changes which have been identified as difficult or very difficult to implement, DEP will lead further discussion amongst County agencies to obtain agreement for subsequent Code changes.



## **Attachment A. Interagency Committee**



List of Interagency Committees with Water Resources Management Roles					
Committee Name	Purpose	Agencies Included (lead is highlighted)	Meeting Frequency	Status	Type
DEP/DPS Coordination	Coordination of cross agency issues	DEP and DPS	Monthly	Active	Administrative Technical
Forest Conservation Advisory Committee	Coordinate on forest and tree preservation issues	DEP, DPS, DED, M-NCPPC, DOT, Council staff, MSCD	Monthly	Active	Policy Issues, Laws, and Guidelines
LID Maintenance Discussion Group	Coordinate the technical requirements and policies relating to maintenance of LID/ESD stormwater structures	DEP, DPS, MCPS, MNCPPC Parks, City of Rockville	Bi-monthly	Active	Technical, Policy
Water Quality Advisory Group	Review and recommend program and policies to elected officials to protect water quality	DEP, Citizen, Business Agricultural and Environmental Representatives, M-NCPPC, WSSC	Monthly	Active	Coordinating
DPS / Engineers	Resolve technical and administrative issues related to SWM and sediment control	DPS, Engineering Firms, DEP	No set schedule	Active	Administrative (Technical)
Drainage Bill Committee	Work out problems with recently enacted drainage legislation	DPS, DPWT, DHCD, Council staff, builders, environmental and citizen groups	regularly until March 2007	Ad Hoc	Technical
New Products Committee	Review new SWM and sediment control (S/C) products	DPS and DEP	Monthly if needed	Active	Technical Policy
Policy and Design	Establish SWM & S/C design and construction standards	DPS and DEP	Monthly	Active	Technical

List of Interagency Committees with Water Resources Management Roles					
Committee Name	Purpose	Agencies Included (lead is highlighted)	Meeting Frequency	Status	Type
Keep Montgomery County Beautiful Taskforce	Educate and change citizen attitudes about littering; support cleanup and beautification projects; encourage citizens and businesses to extensively recycle; and improve awareness about graffiti in the community.	DOT, DEP, citizens	Monthly	Active	Coordinating
Storm Drain Committee	Coordinate drainage complaints and issues	DOT, DEP, DHCD, DPS	Quarterly	Inactive	Technical
Renew Montgomery	Coordination of infrastructure improvements of older neighborhoods	DOT, Regional Service Centers, DHCA, DEP (RainScapes Targeted Neighborhoods)	monthly/quarterly	Active	Coordinating/Technical
Legacy Open Space Committee	Identifies and seeks to maintain parcels with high quality natural resources, water supply protection, and cultural and historic importance	MNCPPC Parks, citizens	quarterly	Active	Coordinating
Development Review and pre-Development Review Committee	Coordinate review of development plans	M-NCPPC Planning, DEP, DPS, DPWT, DFRS, WSSC, MSHA, Verizon, Pepco, Office of the People's Counsel	Every 3 weeks	Active	Technical Administrative

Regional Environmental Committees & Working Groups				
Committee	Purpose	Agencies Included	Meeting Frequency	Status
Anacostia Watershed Restoration Committee (AWRC)	Addresses issues related to the restoration of the Anacostia	COG, DEP, M-NCPPC, PG County, DC, Corps of Engineers, EPA, various Federal agencies, environmental and citizen groups	Quarterly	Active
Anacostia Trash Reduction Strategy Workgroup	Develop and track implementation strategy to reduce trash in the Anacostia	COG, DEP, DPWT, other local governments, State	Quarterly	Active
Chesapeake Bay and Water Resources Policy Committee	Recommends Bay-related policies to the COG Board of Directors	COG, DEP, other area local governments	Quarterly	Active
Water Resources Technical Committee (WRTC)	Addresses water quality issues in the Potomac River Basin	COG, DEP, other local governments	Quarterly	Active
Middle Potomac Tributary Team	Assist in development of Middle Potomac tributary strategy and implementation to achieve nutrient and sediment reduction goals	State, DEP, other local governments, citizen, environmental, business and agricultural representatives	Monthly	Active
Patuxent River Commission	Review programs, policies, and practices affecting Patuxent watershed and river; serves as Patuxent Tributary Team	State, DEP, M-NCPPC, WSSC, other local governments, federal agencies, business, agricultural, and environmental representatives	Monthly	Active
Patuxent Reservoirs Watershed Policy Board	Review and adopt annual action plan and budget developed by TAC for reservoirs and watershed protection	WSSC, Montgomery, PG, Howard Co. Executives, M-NCPPC Executive Director, MSCD and HSCD Chairpersons	Annual	Active

Regional Environmental Committees & Working Groups				
Committee	Purpose	Agencies Included	Meeting Frequency	Status
Patuxent Reservoirs Technical Advisory Committee	Provides technical oversight, annual work program, and interjurisdictional coordination for Patuxent Reservoirs water supply and watershed management	WSSC, DEP, DPS, MSCD, MNCPPC, Howard and Prince George's Counties, State agencies	Quarterly	Active
Chesapeake Bay Committees (Stormwater Workgroup, Urban Forestry Workgroup)	Coordinate multi-jurisdictional issues	EPA, Other federal agencies, States, Counties	Varies	Active

## **Attachment B. CWTF Meeting Summaries**





# Montgomery County Clean Water Task Force

## Meeting Summary

February 1, 2010; 1:00 - 3:00pm  
Rockville Library, 1st floor meeting room



## Meeting Participants

There were 41 representatives from the agencies listed below. In addition, Diane Cameron from the Audubon Naturalist Society and Dusty Rood from Rodgers Consulting were invited as non-agency participants. There were no other non-agency participants in attendance. Attachment 1 shows participant information.

- Department of Environmental Protection (DEP)
- Department of General Services (DGS)
- Department of Transportation (DOT)
- Department of Permitting Services (DPS)
- Fire and Rescue Services (FRS)
- Maryland-National Capital Park and Planning Commission (MNCPPC) – Parks
- Maryland-National Capital Park and Planning Commission (MNCPPC) – Planning
- Montgomery County Public Schools (MCPS)
- Washington Suburban Sanitary Commission (WSSC)

## Background

The Department of Environmental Protection invited the agencies and external stakeholders from the previous Clean Water Task Force (CWTF) to a facilitated discussion of the opportunities and challenges to Environmental Site Design (ESD)/Low Impact Development (LID) for stormwater management in the County. Participants learned results from the initial consultant review of the County's codes, regulations, programs, and policies to allow ESD/LID techniques to be implemented to the maximum extent practicable (MEP). The meeting agenda is included as Attachment 2.

Meeting agenda, attendees, presentations, and summary are posted at:

<http://www.montgomerycountymd.gov/StormwaterPermit/>

## Introduction

**Bob Hoyt, Director, Montgomery County Department of Environmental Protection (DEP)**

Mr. Hoyt welcomed CWTF members and other participants. He updated the group on the status of the County's Municipal Separate Storm Sewer System (MS4) Permit. Maryland Department of the Environment (MDE) will be issuing the permit soon. He underscored how important it is for the agencies to coordinate to meet the permit requirements and protect water resources. Mr. Hoyt noted that implementing the permit is a priority for the County Executive. The County increased the water quality protection charge and capital improvement program 6-year budget by 240% to facilitate meeting the watershed restoration requirements of the Permit.

## Montgomery County's NPDES Permit and the CWTF Meo Curtis, Montgomery County DEP

Meo Curtis reviewed the results from the previous CWTF efforts. The CWTF objectives are to restore "fair" and "poor" quality streams while protecting "good" quality streams through addressing accountability and implementation of LID and ESD throughout Montgomery County. The CWTF included many County agencies, represented at this meeting, and involved environmental and business community representatives. Ms. Curtis stressed the importance of a comprehensive, coordinated activity that ensures streams protection to the MEP.

Ms. Curtis explained that Montgomery County Public Schools (MCPS) are now co-permittees on the County's permit. The County and its seven co-permittees must work together to:

- Accelerate watershed restoration
- Achieve Total Maximum Daily Load (TMDL) reductions
- Meet Potomac trash free treaty commitments



# Montgomery County Clean Water Task Force

## Meeting Summary

February 1, 2010; 1:00 - 3:00pm  
Rockville Library, 1st floor meeting room



- Review and change codes that limit ESD implementation

### What is Environmental Site Design?

Jennifer Zielinski, Biohabitats

Jennifer Zielinski explained what ESD is and how this approach contributes to stormwater management. Ms. Zielinski reviewed a variety of ESD sites and practices. Developers can easily implement many ESD practices.

Following the presentation, Juliana Birkhoff of Resolve, Inc., facilitated a discussion focused on how important it would be to understand the costs of different ESD techniques. Participants also stressed that the County had other green goals, i.e. energy conservation and renewable energy use. It will be important to make sure that ESD and other green technologies and goals are compatible.

### Relevant Planning and Zoning Issues

Rose Krasnow and Josh Sloan, MNCPPC Planning

Rose Krasnow discussed current Department of Planning activities. She focused on how those activities relate to stormwater management issues and plans. MNCPPC Planning has hired a consultant team to review the County's Zoning Code focusing on developing a new code that will better support a sustainable community. The Department of Planning will be rewriting the zoning code. The new zoning code will be more sustainable and incorporate opportunities for ESD. MNCPPC Planning will work with DEP to make sure that the planning activities are coordinated with the County's ESD code review project. Ms. Krasnow noted that it is hard to achieve competing goals for one site. For example, it is difficult to have minimal amounts of pavement while meeting fire and rescue regulations. To simplify this challenge, the Department of Planning will require more information in advance so that the agencies can identify potential conflicts early. There is still a concern about competition among varying interests, and it will be a balancing act to protect water quality, facilitate historic preservation, and continue development. Ms. Krasnow recognized that there is not a current conflict resolution body to make final decisions.

Ms. Krasnow discussed questions from Planning regarding how to include ESD in the most densely urban areas. Commercial and retail zoning allows for denser development. Therefore, the right of way may be the best area to detain or slow down stormwater by installing ESD applications. However, the right of way is also used for utilities, pedestrian traffic, and many other uses. Ms. Krasnow stated the County's priority to provide more guidance and incentives for developers to implement sustainable ESD practices in urban infill areas.

Josh Sloan discussed the challenges of including ESD in CR zones, which will cover 2-3% of County land to encourage redevelopment. The difficulty is in balancing space required by ESD facilities with dense development in urban locations, which tends to push stormwater management underground. Facilities should be allowed off-site and aggregated among various properties to make them efficient, affordable, and to allow for development of the site in an urban rather than suburban pattern. Trade off's or a looser reading of MEP, should be made to allow less stringent stormwater regulations (or more underground structured facilities) in the most dense areas given the environmental mitigation that is inherent in infill development. But encouragement should always be provided via incentives and efficient alternatives for properties to exceed stormwater regulations. Rights-of-way should be used for structured stormwater and microbio retention in medians, tree pits, and swales. Incentives must be provided to get people to redevelop. Greater regulations and more exactions will not get people to redevelop unless density or some other incentive(s) is provided in return. This should work together with policy to take development pressure off suburban/rural land.

### Identifying Potential Impediments to Environmental Site Design in County Code

Jennifer Zielinski and Nicole Stern, Biohabitats

Ms. Zielinski and Nicole Stern presented the review of the County Code and opportunities and barriers to implement ESD. They presented several recommendations for requirements, standards, ordinances, and best practices that include ESD practices and for those that might be barriers to ESD.



# Montgomery County Clean Water Task Force

## Meeting Summary

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The review found:

Chapters with No Barriers or Gaps for ESD	Chapters with Limited Barriers to ESD	Chapters with Significant Barriers, Gaps, and Opportunities
<ul style="list-style-type: none"><li>Chapter 14. Development Districts</li><li>Chapter 18A. Environmental Sustainability</li><li>Chapter 21. Fire and Rescue Services</li><li>Chapter 24B. Homeowners' Associations</li><li>Chapter 27A. Individual Water Supply and Sewage Disposal Facilities</li><li>Chapter 36. Pond Safety</li><li>Chapter 44. Schools and Camps</li><li>Chapter 45. Sewers, Sewage Disposal and Drainage</li><li>Chapter 54A. Transit Facilities</li></ul>	<ul style="list-style-type: none"><li>Chapter 8. Buildings</li><li>Chapter 22. Fire Safety Code</li><li>Chapter 22A. Forest Conservation - Trees</li><li>Chapter 26. Housing and Building Maintenance Standards</li><li>Chapter 40. Real Property</li><li>Chapter 41. Recreation and Recreation Facilities</li><li>Chapter 49. Streets and Roads</li><li>Chapter 50. Subdivision of Land</li><li>Chapter 58. Weeds</li><li>Trees, Approved Technical Manual (Maryland National Capital Park and Planning Commission)</li></ul>	<ul style="list-style-type: none"><li>Chapter 59 – Zoning (ESD coordination with Montgomery County recent Zoning Code Rewrite process)</li></ul>

### Significant Barriers and Gaps

- Chapter 59. Zoning
- Commercial Residential Zones
- Development Approval Process

### Fewer but Still Important Barriers and Gaps

- Chapter 22. Fire Safety Code
- Chapter 26. Housing and Building Maintenance Standards
- Chapter 49. Streets and Roads
- Chapter 50. Subdivision of Land

### Limited Barriers

- Chapter 8. Buildings
- Chapter 22A. Forest Conservation – Trees
- Chapter 40. Real Property
- Chapter 41. Recreation and Recreation Facilities
- Chapter 58. Weeds
- Trees, Approved Technical Manual (MNCPPC)

## What Do Agencies and Stakeholders Think About Barriers and Recommendations to Overcome Them?

### Comments from External Stakeholders and Facilitated Discussion

County agencies need to coordinate to ensure successful implementation to meet the requirements of the MS4 Permit. The agency representatives expressed their willingness to continue discussions to identify and remove barriers and gaps and create efficiencies for implementing ESD techniques.

- Montgomery County needs to consider the stormwater goals in the context of all of the County's planning goals. If the County isolates these goals, it will create conflict.
- The group recognized the importance of clarifying "Maximum Extent Practicable"
  - What is its relationship to budget and planning concerns?
  - Are there measurable goals for assessing MEP?
  - Who will decide what the MEP is on a case-by-case basis?
- One observation was that the public competes for the right of way, particularly in dense areas.
- The group recognized the importance of a conflict resolution system among agencies when there is disagreement during the development review process.



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- The Montgomery County zoning code needs to include incentives for ESD use.
- Several participants suggested maintenance concerns as the biggest impediment to successful ESD. Who maintains and pays for ESD techniques on public property? A County support system for maintaining ESD sites would ensure their effectiveness.
- Recommendations from the comprehensive code review will revise Chapter 19 (due May 4) making it more stringent. These code revisions could change how the county defines MEP. There was a concern that large projects are waiting, with budgets that will change because of required ESD elements. If the required elements change, so must the project budget. This is particularly difficult with projects that are on a government fast track.

Specific agency comments included:

### Hamid Omidvar, DGS

- The entire county is the beneficiary of this collaborative effort, sharing the benefits and the impacts of this work. There needs to be greater communication between the codes and agencies to ensure effective implementation and reduce the environment of confusion. Energy, clean water, and clean air are just a few mutual permitting interests that have impacts on one another.
- The USGBC LEED certification could be a potential solution that would include all of the interests.
- Developers should have a menu for ESD options. Developers could use the menu to choose different ESD practices for their projects. This will be more flexible and result in more ESD use.
- We need to be conscious of clutter while including ESD in development.
- MEP should be a state law, solving problems that arise from non-generic practicality issues that are difficult to solve on varying scales. We also need to ensure that projects do not only pursue the minimum in an effort to meet varying agency goals.

### Carla Reid, DPS

- Sharing information and bringing issues to the table early will help us work through potential conflicts efficiently.
- The current permitting system includes something similar to the menu we hope to see; however, more flexibility would help.

### Josh Sloan, Department of Planning

- Most people that come in with planning applications are looking for guidance towards best practices so that they may get their applications approved.
- Most of the planning conflicts are between agencies. There is a continuing need to assess how different agency needs work with one another.

### Rose Krasnow, Department of Planning

- Requiring a water quality plan for small lots is overly complex, the residential planning process needs to be streamlined not complicated.
- Small ESD practices require maintenance or they do not contribute to stormwater management. There needs to be a system in place that helps homeowners maintain their ESD practices.
- Planning does not count pervious pavement as pervious surface because it is often lacking maintenance plans, which leads to clogged and ineffective ESD practices.

### Craig Shuman, MCPS

- Our first concern is to minimize impervious surfaces. This is a challenge as the student population grows.
- Access roads to each ESD/maintenance site reduce our pervious area.
- The regulations all need to work together with a common goal.
- The definition of MEP needs to be clarified, along with the decision-making body for project specific questions.



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### **M.T. Habibian, WSSC**

- It is important for the group to focus on the watershed as a big picture, to ensure the legacy of stormwater management.

### **Bruce Johnston, DOT**

- It is important not to revert to a narrow focus by continuing a collaborative approach.
- Balance is important when deciding which ESD practices to implement. For example, tree pits may be great for stormwater management; however, road salt will damage the trees.
- There is a lot of competition for the edge of roadway including signage, utilities, street trees, lighting, and stormwater. We need to manage this small space appropriately, or make the public right of way wider. The community does not want a wider right of way, so there will need to be a delicate balance to this space
- DEP will now manage stormwater things in the right of way.
- How can the road code provide incentives for ESD?

### **Bob Hoyt, DEP**

- Stormwater is just one of many County goals, which must all be considered equally to ensure a sustainable solution.
- A mixture of ESD practices will help individual projects meet the county's stormwater goals

### **Mike Riley, MNCPPC-Parks**

- Parks are stewards for 10% of County's land, with a mission to be green.
- Parks is pursuing their own phase 2 NPDES permit.
- The pursuit, funding, and inspection of ESD maintenance will decide the future of stormwater management practices.

### **Presentations by Non-Agency Stakeholders**

Dr. Birkhoff introduced the non-agency stakeholders to provide additional perspectives on implementing ESD techniques in the County.

Diane Cameron (Audubon Naturalist Society and coordinator of Montgomery County Stormwater Consortium) emphasized the importance of comprehensive and coordinated stormwater solutions. She noted that a variety of external stakeholders exist including non-governmental organizations, citizen groups, and community organizations that should be partners in this effort moving forward. Stormwater management decisions are also part of watershed protection and restoration plans and activities. Ms. Cameron noted that recent research has documented that dense urban projects benefit from use of green landscaping features in many ways, including through higher profits, and the combination of such landscaping features with ESD stormwater designs should be investigated. Ms. Cameron advocated for a permanent coordinating committee for water resources. She identified four key issues while considering this potential solution:

- The Water Resources Policy Coordinating Committee will need to consider much more than just stormwater in their collaborative effort towards making the best watershed plan, policy, zoning, and transportation decisions.
- The stormwater permit is for all agencies, and the eight co-permittee agencies will need collaboration for the best solution.
- Outreach, education, training, and partnerships with citizen groups will ensure effective stormwater management practices.
- ESD solutions need to be free-flowing and creative to meet their projects needs. ESD should be implemented on the surface in less dense areas. MEP becomes more relevant in dense areas where developers must use above ground and underground ESD.

Dusty Rood (Rodgers Consulting) discussed integrating stormwater management in new development, redevelopment, and future planning. Each policy and practice has different characteristics and can benefit from unique solutions. A smart growth policy is important to encourage infill in redeveloping areas. Mr. Rood noted that requiring ESD on infill property takes up valuable land. He also asked how developers know when they have reached the MEP. He noted that ESD has changed over time. It focuses on filter area instead of volume base and cannot be solved with structural solutions only; it will require valuable development space. Implementing new ESD on old sites is a challenge for redevelopers. He stated



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that the new ESD standards hurt redevelopment more than new development because of their higher impervious percentages and poorer soils. There is a need to encourage infill development by spreading stormwater management burdens throughout the county. Mr. Rood concluded that best management practices for infill development require denser development. Therefore, there is more competition over land use between different agency needs. Agencies will need to coordinate the implementation of the MS4 Permit through their continued dialogue.

## Next Steps and Organization of Water Resources Policy Coordinating Committee

Meo Curtis, Montgomery County DEP

- Biohabitats will distribute the tabbed code spreadsheet and instructions for agency review. Agencies should aim to put their comments under their agency heading by close of business on February 22 in order to allow time for Biohabitats to compile comments and prepare for the next CWTF meeting.
- There will be another meeting in early March for additional discussion on the code review for ESD to the MEP implementation. During this meeting, agencies will identify consensus for activities and policies to meet the ESD code review requirement in MS4 Permit.
- The public will participate in a larger meeting the end of May or June to review a final draft set of recommendations.

Please direct any questions or comments about this summary to [ESD\\_review@montgomerycountymd.gov](mailto:ESD_review@montgomerycountymd.gov) and we will respond as soon as possible, Thank you.



# Montgomery County Clean Water Task Force

Meeting Summary

February 1, 2010; 1:00 - 3:00pm

Rockville Library, 1st floor meeting room



## Attachment 1 – Participant Information

Montgomery County  
Clean Water Task Force

Public Meeting Sign-In Sheet  
February 1, 2010

Name	Address	Email
Ahmed Naji	101 Monroe St. 71 <sup>th</sup> FL	Ahmed.Naji@mc-m-egov
Steve Shobe		
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Michael A. Donahue	255 Rockville Pk. 2nd Fl	mike.donahue@montgomerycounty.md.gov
Andrew Frank	9500 Burnett Ave, S5 mo 20901	Andrew.Frank@mc-ppc-mc.org
JOSHUA SLOAN	8787 Georgia Ave Silver Spring 20910	JOSHUA.SLOAN@mc-ppc.org



Montgomery County  
Clean Water Task Force

Public Meeting Sign-In Sheet  
February 1, 2010

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Mike Blush	9500 Greenbelt Ave 55 MD 2094	Mike.Blush@mc-- montgomeryparks.org
Marie LaBaw	MCPS 255 Rockville Pike, 2nd floor	marie.labaw@montgomerycounty.md.gov
John Hensch	MNCPPC	john-hensch@montgomeryparks.org
Doug Redmond	MNCPPC	Doug.Redmond@montgomeryparks.org
Rose Krasnow	MNCPPC	Rose.Krasnow@mcps-md.org



Montgomery County  
Clean Water Task Force

Public Meeting Sign-In Sheet  
February 1, 2010

Name	Address	Email
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Michael Kay	MCDGS	michael.kay@montgomerycountymd.gov
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Millie Souders	MCDGS/Alert	millie.souders@montgomerycountymd.gov
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BRUCE JOHNSTON	MC-DOT	bruce.johnston@montgomerycountymd.gov
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Montgomery County  
Clean Water Task Force

Public Meeting Sign-In Sheet  
February 1, 2010

Name	Address	Email
Diane Cameron	AN'S 5940 Jones dual Rd Cherry Chase, MD 20815	dcameron@aadubonaturalist.org
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Geoffrey Mason	M-NCPPC Mont Parks 2000 Shorefield Rd Wheaton, MD 20912	geoffrey.mason@montgomeryparks.org
Carla Reid	DPS	Carla.reid@montgomerycounty.md.gov
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# Montgomery County Clean Water Task Force

Meeting Summary

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## Attachment 2 – Meeting Agenda and Handout



# Montgomery County Clean Water Task Force

February 1, 2010 1:00 - 3:00pm  
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## Purpose

- Review background on Montgomery County's stormwater permit and the Clean Water Task Force;
- Summary of environmental site design and how it addresses stormwater and protects natural resources;
- Overview of County projects to implement environmental site design;
- Learn about Montgomery County activities to modify or rewrite the development approval process and zoning codes;
- Learn about review of Montgomery County Codes and recommendations to include environmental site design;
- Discuss Agency and stakeholder review of opportunities, gaps and barriers and how to promote and accelerate environmental site design implementation;
- Discuss organization and next steps for Water Resources Policy Coordinating Committee.

## Meeting Agenda

### 1:00-1:10 Introduction and Agenda Review

#### *Brief Presentation*

Objective: provide a clear road map for the meeting

Juliana E. Birkhoff, RESOLVE

Bob Hoyt, Director, Montgomery County Department of Environmental Protection (DEP)

### 1:10-1:15 Montgomery County's NPDES Permit and the Clean Water Task Force

#### *Brief Presentation*

Objective: make sure everyone is informed so they can participate well

Meo Curtis, Montgomery County DEP

### 1:15-1:35 What Is Environmental Site Design?

#### *Brief Presentation*

Objective: make sure everyone knows the techniques so they can comment on how to incorporate into codes

Jennifer Zielinski, Biohabitats

### 1:35-1:40 Questions and Answers about Environmental Site Design

Clean Water Task Force Members

Juliana Birkhoff, RESOLVE

### 1:40-1:50 Relevant Planning and Zoning Issues

Objective: Make sure everyone knows what Department of Planning is already doing so review and recommendations are informed by current efforts

Rollin Stanley, Director, Montgomery County Planning Department

### 1:50-2:10 Identifying Potential Impediments to Environmental Site Design in County Code

#### *Presentation*

Objective: learn what consultants have found in Code and their recommendations

Nicole Stern and Jennifer Zielinski, Biohabitats

### 2:10-2:45 What Do Agencies and Stakeholders Think About Barriers and Recommendations to Overcome Them?

#### *Comments from External Stakeholders and Facilitated Discussion*

Objective: provide feedback to MD DEP on recommendations and discover any common ideas

Clean Water Task Force Members

Diane Cameron, Audubon Naturalist Society

Dusty Rood, Rogers and Associates

Juliana Birkhoff, RESOLVE

### 2:45-2:50 Public Comment

Opportunity for public to comment on barriers and recommendations

### 2:50-3:00 Next Steps and Organization of Water Resource Coordinating Committee

#### *Facilitated Discussion*

Objective: outline next steps for coordinated implementation strategy and NPDES permit support

Meo Curtis, Montgomery County DEP

Juliana E. Birkhoff, RESOLVE

### 3:00 Adjourn



# County Code Updates for Environmental Site Design (ESD)

February 1, 2010



## What is Environmental Site Design (ESD)?

According to Chapter 5 of the Maryland Stormwater Manual, ESD is a comprehensive design strategy for maintaining predevelopment runoff characteristics and protecting natural resources. ESD relies on integrating site design, natural hydrology, and smaller scale stormwater management controls to capture and treat runoff. As required by the Stormwater Management Act 2007 and the MS4 Permit, Montgomery County must implement ESD to the Maximum Extent Practicable (MEP).

## ESD involves PROCESSES and PRACTICES

### PRACTICES

- Alternative Surfaces
  - Green Roofs
  - Permeable Pavements
  - Reinforced Turf
- Non-Structural Practices
  - Disconnection of Rooftop Runoff
  - Disconnection of Non-Rooftop Runoff
  - Sheetflow to Conservation Areas
- Microscale Practices
  - Rainwater Harvesting
  - Submerged Gravel Wetlands
  - Landscape Infiltration
  - Infiltration Berms
  - Dry Wells
  - Micro-Bioretenion
  - Rain Gardens
  - Swales
  - Enhanced Filters

### PROCESSES

- Optimize conservation of natural features.
- Minimize impervious surfaces.
- Slow down runoff to maintain discharge timing and to increase infiltration and evapotranspiration.
- Identify potential locations for ESD practices early in the concept planning stage.
- Concurrently plan for stormwater management, density concerns, parking, fire and rescue, forest conservation, and the variety of other Code requirements identified below.

For more information:

<http://www.montgomerycountymd.gov/stormwaterpermit>

## Summary of the Code Review Process

- Barriers are impediments to ESD and are typically found when a specific planning or design requirement is counter to one or more ESD practice design requirements.
- Gaps are less obvious. Due to a lack of detail in the Code, these are subject to interpretation and may serve as impediments in certain situations.
- Opportunities are sections that promote or have the potential to promote ESD. In some of these cases, expanded language that references ESD is recommended.

### Chapters with No Barriers or Gaps for ESD

- Chapter 14. Development Districts
- Chapter 18A. Environmental Sustainability
- Chapter 21. Fire and Rescue Services
- Chapter 24B. Homeowners' Associations
- Chapter 27A. Individual Water Supply & Sewage Disposal Facilities
- Chapter 36. Pond Safety
- Chapter 44. Schools and Camps
- Chapter 45. Sewers, Sewage Disposal and Drainage
- Chapter 54A. Transit Facilities

### Chapters with Limited Barriers to ESD

- Chapter 8. Buildings
- Chapter 22. Fire Safety Code
- Chapter 22A. Forest Conservation - Trees
- Chapter 26. Housing and Building Maintenance Standards
- Chapter 40. Real Property
- Chapter 41. Recreation and Recreation Facilities
- Chapter 49. Streets and Roads
- Chapter 50. Subdivision of Land
- Chapter 58. Weeds
- Trees, Approved Technical Manual (MNCPPC)

### Chapters with Significant Barriers, Gaps, and Opportunities

- Chapter 59 – Zoning (ESD coordination with Montgomery County recent Zoning Code Rewrite process)



# Montgomery County Clean Water Task Force

## Meeting Summary

March 1, 2010; 1:00 - 5:00pm  
Rockville Library, 2<sup>nd</sup> floor meeting room



## Meeting Participants

There were 23 participants including representatives from the agencies listed below. Attachment 1 shows participant information.

- Department of Environmental Protection (DEP)
- Department of General Services (DGS)
- Department of Transportation (DOT)
- Department of Permitting Services (DPS)
- Fire and Rescue Services (FRS)
- Maryland-National Capital Park and Planning Commission (MNCPPC) – Parks
- Maryland-National Capital Park and Planning Commission (MNCPPC) – Planning
- Montgomery County Public Schools (MCPS)

## Background

The Department of Environmental Protection invited the agencies and external stakeholders from the Clean Water Task Force (CWTF) to discuss potential code modifications to increase opportunities for Environmental Site Design (ESD)/Low Impact Development (LID) stormwater management in the County. The discussion identified; which modifications could be easily implemented, which had impediments but merit further discussion, and which will be difficult to achieve. The meeting agenda is included as Attachment 2.

Meeting agenda, attendees, presentations, and summary are posted at:

<http://www.montgomerycountymd.gov/StormwaterPermit/>

## Introduction

**Bob Hoyt, Director, Montgomery County Department of Environmental Protection (DEP)**

Mr. Hoyt welcomed CWTF members and other participants. He informed the group that the Maryland Department of the Environment (MDE) had issued the County's Municipal Separate Storm Sewer System (MS4) Permit. He underscored how important it is for the agencies to coordinate to meet the permit requirements and protect water resources without sacrificing important county goals.

## Common Issues and Concerns

**Nicole Stern, Biohabitats**

Ms. Stern presented common issues and concerns from the February 1 CWTF meeting. CWTF members discussed five issues:

- Road Code – The Road Code had been recently updated. No impediments and only limited gaps and opportunities were identified in the current review.
- ESD and Trees – Some group members were concerned that stormwater from ESD techniques might adversely affect trees along roadways. Several people suggested using salt tolerant, native species of trees in ESD practices. CWTF members suggested that the County should select trees to meet stormwater management, landscape architecture, and DOT needs. Street trees need to be able to withstand usual conditions associated with roads and road maintenance. ESD practices will need to support tree replacement if necessary. The revised Road Code requires that DOT aim for 25% of stormwater to be managed in vegetated buffers within the right of way. One member explained that this was not a problem in roads with open section ditches but for locations that use curbs and gutters. The issue of street trees combined with ESD stormwater practices had been discussed in detail as part of the Road Code review and had been continued through an informal interagency working group



# Montgomery County Clean Water Task Force

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during 2009. CTWF members decided to organize a discussion to follow up on those previous interagency meetings and attempt to build consensus on combining street trees with stormwater management uses.

- o Meo Curtis agreed to consolidate a list of issues based on previous interagency meetings and convene a follow up meeting to identify tree species that could be used for the County's street tree program and for vegetated stormwater management. She called for a decision making timeline for street trees and ESD. Rick Brush (DPS), Brett Linkletter (DOT), and Josh Sloan (MNCPPC – Planning) agreed to participate. Biohabitats will assess how other urban jurisdictions deal with ESD, trees, and road issues.

### **Rick Brush, DPS:**

- o Planning staff may have difference preferences for trees in urban landscapes.
- o ESD trees need to be evaluated for their salt tolerance and water absorption capacities.
- o Agencies need to come to concurrence about which trees are acceptable to use for different needs. For example trees that may be salt tolerant and preferable for roadside ESDs may not be preferable by landscape architects.
- o The road code should be used as the centralized location for tree listings.

### **Michael Mitchell, DOT:**

- o With regard to maintenance: Trees in bioretention facilities can complicate maintenance of the bioretention facility. Can a tree with a matured root system 6-10 years down the line sustain maintenance impacts?
- o The road code currently excludes trees for ESD
- o The road code has a goal to manage 25% of stormwater in the right of way.

### **Craig Shuman, MCPS:**

- o There should not be a requirement to use trees in contentious areas. It is not realistic to require planting trees where maintenance is likely to destroy the tree.
- Fire and Rescue Equipment – Marie LaBaw (FRS) discussed the need for pervious pavement that supports fire and rescue equipment without sustaining extensive damage. A current impediment is that manufacturers do not warranty permeable pavement systems that can withstand FRS vehicle weights. FRS is excited about reinforced turf but there are no installations in the County they can test. Also, Dr. LaBaw pointed out that alternative surfaces may not be appropriate everywhere and there are different requirements for travel lanes versus set-up areas.
  - o Steve Federline (MNCPPC-Planning) explained that over time the surfaces become impervious. The goal should be to minimize impervious surfaces first.
- WSSC plumbing code vs. rainwater reuse – Ms. Stern explained that code does not allow reusing collected rainwater inside buildings, which is not currently a common practice. The code does allow rainwater to be used for irrigation.
- Combining green design strategies – Ms. Stern demonstrated several ways combine multiple technologies in the same space. Creative thinking about potential conflicts and pairing the appropriate technologies together is an effective strategy to avoid complications.

## **Maintenance**

### **Amy Stevens, Montgomery County DEP**

Ms. Stevens discussed the 2007 stormwater act and ESD maintenance. DEP will be accountable for ESD facility maintenance. DEP will keep an inventory of ESD practices in Montgomery County including schools but excluding individual jurisdictions. DEP will be responsible for inspecting ESD practices. Ms. Stevens said DEP is discussing developing maintenance programs for ESD practices. She conveyed that there may be access requirements for ESD practices on private property so that DEP staff can perform inspections. Ms. Stevens noted that DEP is currently looking into the types of easement and maintenance agreements the County will need for ESD practices. The County's current program focuses on maintenance of the structural components of stormwater practices. DEP is looking at how to define



# Montgomery County Clean Water Task Force

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“structural” in terms of ESD practices, and is currently finishing up a bioretention maintenance policy. As DEP develops maintenance and inspection policies, they will be available for agency comment. DEP is also designing a program to train HOAs and contractors to maintain ESD practices.

Ms. Stevens encourages agency representatives to discuss their concerns with DEP including:

- What qualifies as a structural ESD practice?
  - Rick Brush (DPS) cautioned that DEP needs to define how stringent maintenance of non-structural facilities and ESD on private lots will be. DEP will need to communicate with individual homeowners.
- How to maintain trees and which ESD designs are easiest to maintain.
- Bioretention practices and their maintenance needs.

### Mike Riley, MNCPPC-Parks:

- It is important to identifying the cost of maintaining ESD practices. Organizations need to be aware of this cost in advance so that it can be included in budget planning.
- An analysis of the cost of maintaining ESD systems compared to conventional systems would be useful to assist in decision making. Parties responsible for maintenance need to be made aware of the cost in advance. If practices are not maintained 20 years from now because of financial shortfall, then we need to rethink maintenance. It will be important to clarify where the revenue will come from.
- If all ESD is going to be nonstructural then that would have a significant budget impact

### Steve Federline, MNCPPC – Planning

- Someone will need to be accountable for short and long term maintenance.
- The county will need to train HOAs to maintain ESD practices.
- DEP should hold HOAs accountable for maintenance.
  - Audience Comment – Not every neighborhood has an HOA.

### Rick Brush, DPS:

- How stringent will ESD maintenance requirements be for nonstructural facilities on private property?
- Howard County is considering not allowing structures on private property.
- We need to understand the maintenance capabilities of homeowners, and what limitations there may be even with proper training.

## Density, Redevelopment, Infill and Sustainability Audit

### Nicole Stern, Biohabitats

Ms. Stern discussed the use of ESD practices in highly dense areas. She presented several examples of redevelopment and infill development projects that integrated ESD practices.

Dr. Birkhoff led a facilitated discussion on ESD integration into highly dense areas. Dr. LaBaw (FRS) conveyed her agency's questions about fighting high-rise green roof fires. She suggested alternative water source or pumping facility to provide rooftop water access. Mr. Brush (DPS) responded that vegetation selection for green roofs should exclude brushfire prone plants. CWTF members agreed that the report should address green roof design and rooftop fire prevention.

## MEP, Development Approval Process, and Lead Agency Designation

### Jennifer Zielinski, Biohabitats

Ms. Zielinski reviewed the State's regulatory definitions of ESD and Maximum Extent Practicable (MEP). The report will not redefine MEP. She discussed approaches for developers and agencies to know when they have implemented to the MEP. The flowchart (Attachment 3) from the Maryland Stormwater Design Manual evaluates MEP in three points throughout the process; concept plan stage, site development plan stage, and final plan submittal stage.



# Montgomery County Clean Water Task Force

## Meeting Summary

March 1, 2010; 1:00 - 5:00pm

Rockville Library, 2<sup>nd</sup> floor meeting room



Several members of the CWTF suggested that a checklist would help implement stormwater management practices to the MEP. Ms. Zielinski reported that the DAP Conflict Resolution Working Group currently examines lead agency and stakeholder agency designations. She highlighted four findings and recommendations for the Development Approval Process (DAP):

- Stormwater management is not formally introduced into the DAP until many other site elements have been laid out.
- Site plans and details submitted to different agencies for review do not always show the proposed locations of stormwater BMPs.
- Re-zoning applicants are often required to provide a detailed concept plan early in the DAP.
- NRI/FSD does not identify areas on a development site that may be appropriate locations for stormwater management.

Ms. Zielinski also set forth three questions for discussion:

- Should MEP be in DAP?
- How will MEP be determined equitably across different development projects?
- Is MEP different for new- and redevelopment projects?

Dr. Birkhoff facilitated an inter-agency discussion. Specific agency comments included:

### **Michael Mitchell, DOT**

- The report needs to include the variety of areas discussed, not just a focus on MEP.
- A cost / benefit analysis needs to be included in understanding when developers reach the MEP.
- MEP for transportation is not the same as for development projects.
- The report should focus on the watershed as a whole, stormwater integration into the master plan, is more valuable than a project-by-project focus.

### **Meosotis Curtis, DEP**

- The road code includes stormwater management goals, not regulations.
- Transportation is a unique process; it is linear not vertical.
- It is important that we evaluate and choose ESD practices that serve multiple functions and have multiple benefits.

### **Steve Federline, MNCPPC – Planning**

- Very early coordination will be needed to meet the permits goals
- There are examples that can be assessed as models for understanding how to achieve the MEP; i.e., the forest conservation law.
- This will be a learning process. We will need to revisit our progress to learn and adapt aggressively to achieve our goals.
- The report needs to address ensuring the most “bang for our buck” through focus on regional solutions that may have greater affect on stormwater management than small-scale ESD practices.
- The checklist needs to include options which developers are required to assess, depending on development area and type, to meet a variety of different objectives. This documentation should be customizable and serves to limit and clarify stormwater objectives.
- We need to consider a smart growth strategy. How far do you go to achieve MEP? Does this mean sacrificing density? Should the MEP definition consider density requirements of smart growth?

### **Craig Shuman, MCPS**

- The results of this conversation are recommendations for modifications in the code. These modifications will assist in the implementation of ESD to the MEP. The recommendations should not be mandatory regulations.
- MCPS and other agencies are budget driven. These budgets are time sensitive; we need to ensure that meeting the code does not cause a delay in our processes that are not budgeted. Early integration in the planning process is required for successful implementation.



# Montgomery County Clean Water Task Force

## Meeting Summary

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Rockville Library, 2<sup>nd</sup> floor meeting room



### Josh Sloan, MNCPPC – Planning

- We would like to see the base regulation minimum requirement for stormwater management moved higher. This change essentially functions as a sliding scale, effectively raising the average ESD use.
- Different development scenarios could require different stormwater management checklists.
- The rules could shift for different sized properties.
- We may want to consider setting performance targets for county review.

### Rick Brush, DPS

- We can use incentives to increase use of ESD and/or require more ESD use from the onset.
- The report will need to address how ESD to the MEP should be part of redevelopment, sector, and master plans. MEP works within these places and has adverse affects on density requirements. Early integration into these plans would ensure that we do not, in effect, reduce density.
- We should have a "fee-in-lieu" option to ensure that the challenges of meeting density requirements and ESD requirements do not stall progress.
- Concerns regarding grandfathering development projects in without meeting ESD requirements will no longer be an issue; the state is considering legislation.

### Rose Krasnow, MNCPPC – Planning

- Achieving the MEP in the development approval process is a regulatory requirement, not an option.
- Developers are going to try to find reasons why ESD practices are unacceptable for their projects. The lead agency will determine which reasons will be acceptable and which will not be. An example of an acceptable reason to discount a potential ESD practice would be recognition as a historic location.

## Open Discussion

The public and other agency staff provided comments twice during the meeting. Several public participants voiced their concerns about ESD and stormwater management.

- Dusty Rood (Rodgers Consulting) suggested that the County should consider project viability along with density in urban areas. More ESD might make a project less viable even if it does not harm density.
- Several participants suggested maintenance workers will need a comprehensive inventory and mapping system with instructions for accessing ESD facilities. Some facilities can be very difficult to identify. Some ESD facilities blend into the natural surroundings, and most maintenance workers do not have access to complicated GIS mapping technology to assist in identifying facilities. Mike Riley, MNCPPC-Parks, suggested individualized inventory and maintenance standards for each facility
- A public participant recognized the need to consider ways we can follow ADA requirements while reducing impervious surfaces.
- Doug Redmond, MNCPPC-Parks discussed the delicate balance between doing things off site and meeting stormwater management goals. Historically, offsite meant parkland which already has a purpose. We need to understand what offsite is going to be? If all stormwater management is regional (offsite) then we are not doing ESD.
- A member of a local watershed society called for limiting student parking and public parking lots to reduce impervious surface. A program incentivizing shared parking would be a valuable investment. He also conveyed that the county should have eminent domain over private parking lots to convert underutilized lots into bioretention facilities.
- Craig Shuman, MCPS, commented that school parking is available for community use during non-school hours. Mr. Shuman said there have been requests for committed spaces to groups on the weekends. MCPS has not figured out an equitable way to commit spaces without precluding anyone from the public from using the spaces.
- A local watershed group representative pointed out that abandoned rights of way account for large amount of impervious surface. These roads are maintained by homeowners, and could provide additional opportunities for implementing ESD.



# Montgomery County Clean Water Task Force

## Meeting Summary

March 1, 2010; 1:00 - 5:00pm  
Rockville Library, 2<sup>nd</sup> floor meeting room



## Summary and Next Steps

### Final Report

The group agreed that the final report should address the following issues:

- What kinds of trees are acceptable in which situations?
- DEP is accountable for maintenance.
  - Advanced notice is necessary for agencies to be able to integrate maintenance into their budgets.
  - Will HOAs be responsible for maintaining their ESD features? Will the county provide assistance and training?
  - What is the appropriate way to maintain alternate surfaces?
  - Is there a difference between public and private facility maintenance and inspections?
    - The report should clarify who will be responsible in each situation.
- The report should capture fire prevention concerns for green roofs, particularly high-rise buildings.
  - What plants are acceptable for green roof use?
  - Fire and Rescue access points are needed on high-rise green roofs
- ESD inventory and mapping tools will need to be centrally located
  - Useful for assisting maintenance workers to locate ESD sites.
  - There is alternative value to public groups (such as HOAs) having access to this information.
- The report should include how ESD affects project viability, separate from the impacts of density.
- The report should clearly define MEP.
  - Developers need clear questions and criteria for evaluating and defining the MEP on a site-by-site basis.
  - The report should include an indicator for when a developer has reached the MEP.
  - MEP should be included in the Development Approval Process.
- The report should convey the importance of early consultation in the planning process
  - ESD to the MEP should be written into the County's master and sector plans
- The report should caution that transportation is unique compared to other development projects
- The report should indicate how stringent DEP would be with enforcing and maintaining ESD sites.

### Next Steps

- Trees - Meo will convene a follow up meeting to identify issues and list of street trees that could be used in stormwater management.
  - Rick Brush (DPS), Brett Linkletter (DOT), and Josh Sloan (MNCPPC – Planning) will participate.
  - Biohabitats will assess how other urban jurisdictions deal with this problem as potential models for solutions.
- The permit has been issued and a report is required by May 4, 2010.
  - DEP will be sending around a draft document to agencies towards the end of April.
- Please send any clarifications and corrections regarding this meeting summary to [ESD\\_review@montgomerycountymd.gov](mailto:ESD_review@montgomerycountymd.gov).



# Montgomery County Clean Water Task Force

Meeting Summary

March 1, 2010; 1:00 - 5:00pm


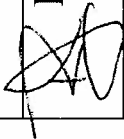
Rockville Library, 2<sup>nd</sup> floor meeting room



## Attachment 1 – Participant Information

Montgomery County  
Clean Water Task Force


Public Meeting Sign-In Sheet  
March 1, 2010

Name	Agency / Organization	Email
 Andrew Frank	MNCPPC	On Record
Sean Gallagher	MCPS	On Record
Gene Giddens	MNCPPC	On Record
Gary Gumm	WSSC	On Record
Mohammad Habibian	WSSC	On Record
John Hench	MNCPPC	On Record
Arthur Holmes	DOT	On Record
Bob Hoyt	DEP	On Record
 Richard Jackson	DGS	On Record
Bruce Johnston	DOT	On Record



Montgomery County  
Clean Water Task Force




Public Meeting Sign-In Sheet  
March 1, 2010

Name	Agency / Organization	Email
Harold Adams	DGS	On Record
Mary Bradford	MNCPPC	On Record
 Rick Brush	DPS	On Record
Jai Cole	MNCPPC	On Record
Keith Compton	DOT	On Record
Violet Conge	DGS	On Record
Meosotis Curtis	DEP	On Record
David E. Dise	DGS	On Record
Mary Dolan	MNCPPC	On Record
Michael Donahue	FRS	On Record



Montgomery County  
Clean Water Task Force



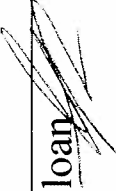

Public Meeting Sign-In Sheet  
March 1, 2010

Name	Agency / Organization	Email
 Rose Krasnow	MNCPPC	On Record
Joseph Lavorgna	MCPS	On Record
Keith Levchenko 	CCL	On Record
Brett Linkletter 	DOT	On Record
Geoffrey Mason	MNCPPC	On Record
John Nissel	MNCPPC	On Record
Hamid Omidvar	DGS	On Record
Suresh Patel	DGS	On Record
Mitra Pedoeem	MNCPPC	On Record
Mark Pfefferle	MNCPPC	On Record



Montgomery County  
Clean Water Task Force

Public Meeting Sign-In Sheet  
March 1, 2010

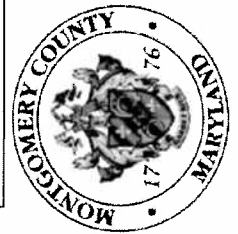
Name	Agency / Organization	Email
 Doug Redmond	MNCPPC	On Record
Carla Reid	DPS	On Record
Mike Riley 	MNCPPC	On Record
Steven Shofar	DEP	On Record
Craig Shuman	MCPS	On Record
Joshua Sloan 	MNCPPC	On Record
James Song	MCPS	On Record
Millie Sounders	DGS	On Record
Rollin Stanley	MNCPPC	On Record
Amy Stevens 	DEP	On Record



Montgomery County  
Clean Water Task Force

Public Meeting Sign-In Sheet  
March 1, 2010

Name	Agency / Organization	Email
Steve Suprat	MDOT	Steve.Suprat@montgomerycountymd.gov
Russell Pierce	Pierce Consulting	Russell@dp13
		@yahoo.com
Rose Krasnow	MNEPPE	rose.krasnow@mneppc-me
Bruce Gilmore	Anacostia Watershed Society	rgilmore@anacostia.org



Montgomery County  
Clean Water Task Force

Public Meeting Sign-In Sheet  
March 1, 2010

Name	Agency / Organization	Email
David Vismara	MNCPPC	On Record
Stan Wong <i>SW</i>	DPS	On Record
Mark Symborski	M-NCPPC	mark.symborski@mncppc-mc.org
Ahmed Najji	DGS	
Michael Vaxx	DGS	Michael.Vaxx@montgomerycountymd.gov
Steve Federtine	M-NCPPC - Env. Planning	steve.federtine@mncppc-mc.org
Marie LaBaw	MCFRS	marie.labaw@montgomerycountymd.gov
Michael Mitchell	MC-DOT	michael.mitchell@montgomerycountymd.gov
Dusty Reed	Rodgers Consulting	DREED@RODGERS.COM
Steve Dryden	Stormwater Partners	jsdryden@concast.net



*Friends of Rock Creek*



# Montgomery County Clean Water Task Force

Meeting Summary

March 1, 2010; 1:00 - 5:00pm

Rockville Library, 2<sup>nd</sup> floor meeting room



## Attachment 2 – Meeting Agenda and Handout



# Implementing Environmental Site Design (ESD) to the Maximum Extent Practicable (MEP)

March 1, 2010



## What is Environmental Site Design (ESD)?

ESD is a comprehensive design strategy for maintaining predevelopment runoff characteristics and protecting natural resources. ESD relies on integrating site design, natural hydrology, and smaller scale stormwater management controls to capture and treat runoff. In addition to reducing runoff, improving water quality, and reducing issues with flooding, ESD:

- Filters air
- Shades, reducing urban heat island effects
- Provides cooling vegetation
- Provides habitat
- Provides human amenities for recreational landscape experiences
- Provides for the therapeutic benefits of natural areas
- Provides noise and aesthetic buffers
- Provides spaces for research and learning
- Reduces emissions and fuel costs through limited maintenance

## Why is ESD to the MEP the focus?

The ESD approach to development, redevelopment, and retrofitting is preferred because it conserves natural features and runoff patterns on a site and reduces pollutants entering the storm drains, stormwater management facilities, and local streams and other waterways.

There are regional and state regulatory requirements to use ESD approaches for stormwater management to protect our local and regional waters and aquatic resources. Montgomery County's new MS4 permit requires that the County identify means of promoting the implementation of ESD. Section E.1.b. of the permit states the following:

*Implement the stormwater management design policies, principles, methods, and practices found in the 2000 Maryland Stormwater Design Manual and the provisions*

*of Maryland's Stormwater Management Act of 2007 (Act). This includes, but is not limited to:*

- Within one year of State adoption of regulations required under the Act, modify the County stormwater management ordinance, regulations, and new development plans review and approval processes in order to implement environmental site design (ESD) to the MEP;*
- Within one year of State adoption of regulations required under the Act, review existing planning and zoning and public works ordinance and other local codes to identify impediments to, and opportunities for, promoting the implementation of environmental site design (ESD) to the MEP.*
- Within two years of State adoption of regulations required under the Act, modify those ordinances and codes identified in Part III.E.b.ii. above to eliminate impediments to, and promote implementation of, ESD to the MEP; and*
- Report annually the modifications that have or need to be made to all ordinances, regulations, and new development plans review and approval processes to accommodate the requirements of the Act.*

The State adopted regulations required under the Act on May 4, 2009.

## Next Steps

- A draft report will be produced on existing laws and regulations, obstacles to implementing ESD, and recommendations to promote the use of ESD techniques to the MEP along with recommended changes needed to implement the revised State Stormwater Design Manual.
- The draft report will be submitted to the CWTF members for review and to MDE by May 4, 2010.
- Draft findings and recommendations will be presented to the public in June 2010.



# Montgomery County Clean Water Task Force

March 1, 2010 1:00 - 5:00pm  
Rockville Library, 2nd floor meeting room



## Purpose

- Identify potential Code modifications that may be easily implemented
- Identify impediments and corresponding Code modifications that merit further discussion
- Identify potential Code modifications that will be very difficult to achieve

## Meeting Agenda

### 1:00-1:15 Introduction, Agenda Review, & Overview of Categories

Objective: provide a clear road map for the meeting

Juliana E. Birkhoff, RESOLVE

Bob Hoyt, Director, Montgomery County Department of Environmental Protection (DEP)

### 1:15-1:50 Common Issues and Concerns

#### *Brief Presentation and Facilitated Discussion*

Objective: address topics of common concern and examples of ESD in these contexts

Nicole Stern and Jennifer Zielinski, Biohabitats

Juliana Birkhoff, RESOLVE

CWTF members

### 1:50-2:15 Maintenance

#### *Brief Talk and Facilitated Discussion*

Objective: discuss inventory, inspection, and maintenance concerns

Amy Stevens, Montgomery County DEP

Juliana Birkhoff, RESOLVE

CWTF members

### 2:15-3:15 Density, Redevelopment, Infill, and Sustainability Audit

#### *Brief Presentation and Facilitated Discussion*

Objective: review applications of ESD in dense, urban areas; discuss challenges and solutions to implementing ESD while encouraging Smart Growth.

Nicole Stern and Jennifer Zielinski, Biohabitats

Meo Curtis, Montgomery County, DEP

Juliana Birkhoff, RESOLVE

CWTF members

### 3:15-3:25 Open Discussion

#### *Comments from All Stakeholders and Facilitated Discussion*

Objective: chance to raise issues that have not been dealt with so far and explore how to learn about them, delegate them, or make recommendations on them

### 3:25-3:35 Break

### 3:35-4:35 MEP, Development Approval Process, and Lead Agency Designation

#### *Brief Presentation and Facilitated Discussion*

Objective: discuss integration of MEP determination into the Development Approval Process

Jennifer Zielinski, Biohabitats

Meo Curtis, Montgomery County DEP

Juliana Birkhoff, RESOLVE

CWTF members

### 4:35-4:45 Open Discussion

#### *Comments from All Stakeholders and Facilitated Discussion*

Objective: chance to raise issues that have not been dealt with so far and explore how to learn about them, delegate them, or make recommendations on them

Juliana Birkhoff, RESOLVE

CWTF members

### 4:45-5:00 Summary and Next Steps

Objective: summarize recommendations and next steps for the Code review and the CWTF

### 5:00 Adjourn



# Montgomery County Clean Water Task Force

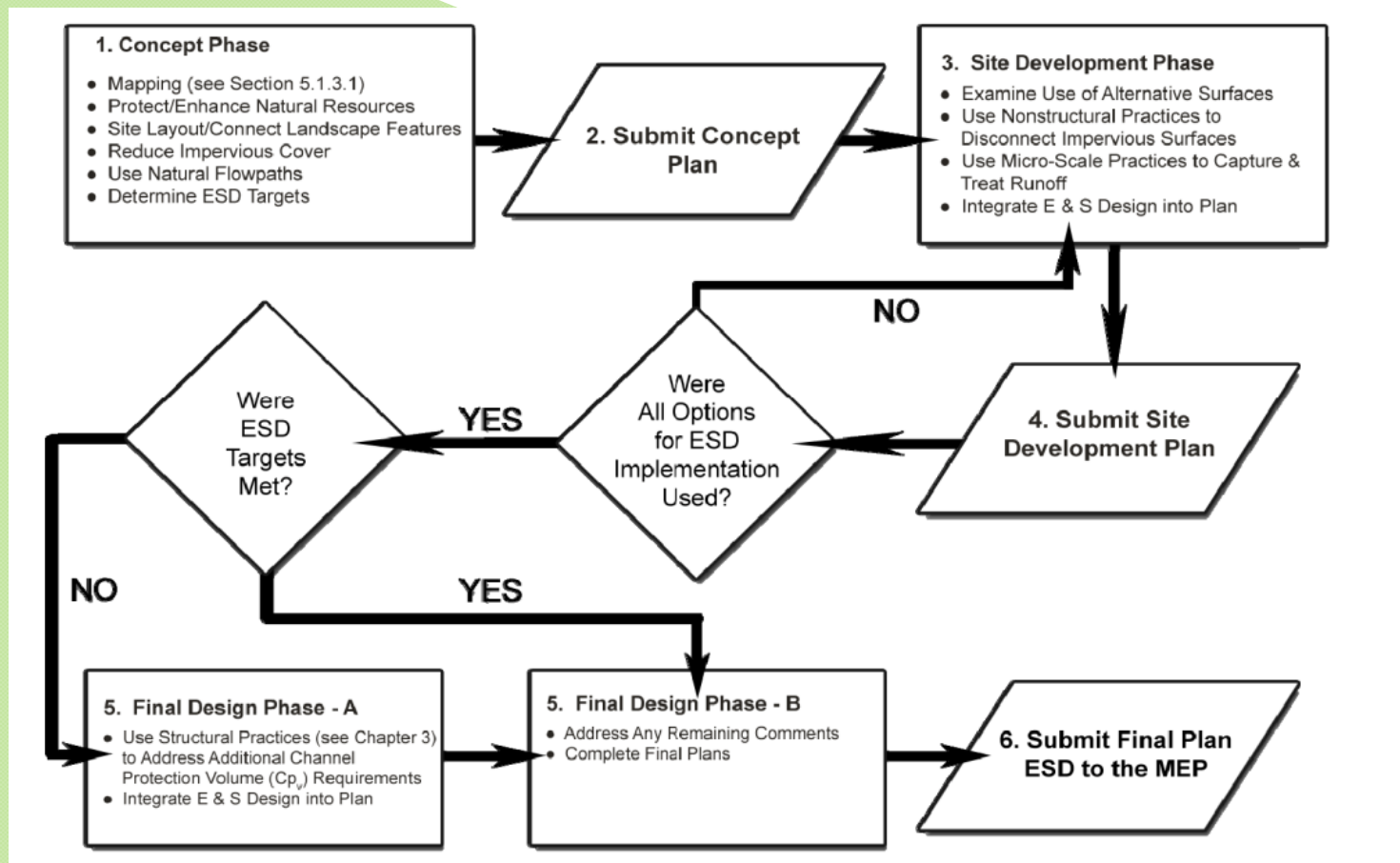
Meeting Summary

March 1, 2010; 1:00 - 5:00pm

Rockville Library, 2<sup>nd</sup> floor meeting room



## Attachment 3 – Figure 5.1 Design Process for New Development from the Maryland Stormwater Design Manual





## **Attachment C. Detailed Code Review Spreadsheet**



Relevant Code, Standard, Specification or Policy: ALL CODES

ROW NUMBER	Relevant ESD Type	Section #	Opportunity, Barrier, or Gap	Preliminary Recommended Changes	Relevant Other Code	Notes and Questions
1	<div>* All worksheets in this workbook are formatted to print on 11 x 17" (tabloid) paper</div>					
2						
3						
4						
5						
6						
7	CHAPTER 8. BUILDINGS					
8						
9	all	Ch8 Sect.8-29B	Gap	Consider expanding to include all residential lots.		Applies to lots smaller than 15,000 square feet.
10	disconnection of roof runoff	Ch8 Sect.8-29B	Barrier Gap			possible barrier/gap - safe conveyance; this is a great code as it ensures safe conveyance of stormwater. This needs to be considered when encouraging downspout disconnects as it relates to where the disconnected downspouts drain.
11	rainwater harvesting & disconnection of roof runoff	Ch8 Sect.8-29B	Opportunity			possibly encourages - with use of rain barrel, cistern, detention, etc; same code as above, but listed separately as an opportunity
12	all	Ch 8 Sec.8-29B(b)(1)	Opportunity			Promotes the use of on-lot practices, including ESD practices.
13	permeable pavements	Ch 8 Sec.8-29B(b)(1)	Opportunity			encourages - requiring safe conveyance and control measures for small lots. specifically mentioning permeable paved area
14	micro bioretention	Sec.8-29B(b)(1)	Opportunity	specifically mentions bioretention		
15	green roof	Ch 8 Sec.8-29B(b)(1)	Opportunity	add intensive or extensive green roof, as rooftop garden may be perceived as simply personal garden plots/planters		encourages - requiring safe conveyance and control measures for small lots. specifically mentioning rooftop garden for control of runoff
16	submerged gravel wetlands	Ch 8 Sec.8-29B(b)(1) or (2)	Opportunity	add specific mention of submerged wetlands as an option		
17	sheetflow to conservation areas	Ch8 Sec.8-29B(b)(1) & (4)	Opportunity	include approved Conservation Area in list of natural areas as places for on site absorption		careful consideration of conservation areas for this purpose to ensure the additional runoff does not negatively impact these areas
18	dry wells, infiltration berms, & stormwater planters	Sec.8-29B(b)(1) - (4)	Opportunity	does not specifically use the term 'dry well', 'infiltration berm', or 'stormwater planter', but items listed could be interpreted to describe either of these		
19	landscape infiltration	8-29B(b)(1) - (4)	Opportunity			
20	swales	Sec.8-29B(b)(3)	Opportunity	Specifically mentions swale		
21	rain garden	Sec.8-29B(c)(1)	Opportunity	Specifically mentions rain garden		Define soil spec?

COMMENTS	POTENTIAL DIFFICULTY OF IMPLEMENTATION			REPETITIVE, UNNECESSARY, OR INAPPROPRIATE
	EASY	DIFFICULT	VERY DIFFICULT	

<b>1.</b> I know this is confusing. However, stormwater management is already required for all properties where a sediment control permit is required (land disturbance of 5000 square feet or where a principal structure is to be constructed - i.e. a house- regardless of the amount of disturbance). Any thing required in Chapter 8 would therefore be duplicative. In fact 8-24 (f)(7) says that drainage control is not required when a stormwater management plan has been approved. At present, 8-29 relates more to drainage controls for additions to existing houses rather than the construction of new houses to prevent lot to lot drainage problems. I doubt that expanding the coverage to include lots greater than 15,000 square feet would achieve much environmentally. <b>2.</b> Providing ESD on small lots will be difficult to enforce and maintain, especially if it is left t o an HOA or the County to maintain. <b>3.</b> No exception taken to recommended change to include all residential lots smaller than 15,000 s.f.				X
<b>1.</b> Agreed	X			
<b>1.</b> Agreed	X			
<b>1.</b> It would be helpful to put in titles re: Chapter 8 Sec. XXX-What does this pertain to other than buildings? Put in a reference.	X			
	X			
	X			
	X			
<b>1.</b> Do we really want a submerged wetland on a small residential lot in a relatively dense neighborhood. <b>2.</b> Agree with recommendation				X
<b>1.</b> Agree with recommendation	X			
<b>1.</b> Lot size may prevent the use of an infiltration berm.		X		
	X			
	X			
<b>1.</b> Define soil spec?	X			

ROW NUMBER	Relevant ESD Type	Section #	Opportunity, Barrier, or Gap	Preliminary Recommended Changes	Relevant Other Code	Notes and Questions
22	disconnection of roof runoff	Ch8 Sect.8-42(a)(1)	Opportunity			LEED Silver requirement. LEED has specific stormwater runoff requirements that would encourage detaining/infiltrating on site
23	green roof	Ch 8 Sec.8-49(a)(1)	Opportunity			may encourage - requires LEED Silver, LEED gives credits for green roofs
24	CHAPTER 18A. ENVIRONMENTAL SUSTAINABILITY					
25						
26						
27	green roof	Ch 18 Sec.18A.13(f)(6)	Opportunity	consider incentives for green roofs for insulative value		may encourage - requires evaluating options to create incentives for increased energy efficiency
28	green roof	Ch 18 -14 (c)(4)	Opportunity	include increase green roof coverage along with increasing tree canopy		<del>soil and native plants often have as much if not more co2 sequestration as trees.</del> Green roofs typically use mainly sedum plants because they are well adapted to green roof soil and rooftop conditions. Some native plants should be considered for green roof planting depending on their tolerance of green roof conditions. Depending on the volume of biomass (usually kept to a minimum for weight and fire considerations), green roofs could play a role in carbon sequestration. <del>May encourage—identify ways to increase sequestration of green house gasses</del>
29	green roof	Ch 18 Sec. 18A-26(a)	Opportunity			consider green roof applicability for loan fund assistance due to <del>warm weather</del> insulative value, along with reduced urban heat island, reduced stormwater runoff, etc. May encourage - loan funds eligibility to help with energy efficiency ( <del>for cooling</del> ) of single family homes
30	CHAPTER 22. FIRE SAFETY CODE					
31						
32						
33	permeable pavements	Ch 22	Gap	develop/add list of pre-approved permeable pavement options		while not specified in the code, it might be useful to have a list of pre-approved permeable pavement options that meet the local fire access requirements for easy reference and encouraged use
34	reinforced turf	Ch 22 Sec. 22-32(a) & (b)	Gap	specify delineation requirements for reinforced turf areas as Fire Lanes - such as red curbs, clear lane demarcation with curb or edging		while not specified in the code, it might be useful to have a list of pre-approved turf reinforcement options that meet the local fire access requirements for easy reference and encouraged use
35	green roof	Ch 22 Sec. 22-98(a)	Barrier	ensure green roofs or specific vegetation class green roofs are listed as having a different class rating		May be barrier - requires roof material to not have a class A rating; must be independent testing organization classification - does Green Roofs for Healthy cities or manufacturers have specific ratings listed?
36	rainwater harvesting & disconnection of roof runoff	Ch22 Sec.22-40	Barrier			possible impediment - cistern/rain barrel size and location may not block passage way to entrance or exit during emergency; some cisterns or rainbarrels are designed to fit under decks or patios, or stack narrowly against side walls. These should be made known to residences and others considering construction or retrofitting
37	CHAPTER 22A. FOREST CONSERVATION					
38						
39						

COMMENTS	POTENTIAL DIFFICULTY OF IMPLEMENTATION			REPETITIVE, UNNECESSARY, OR INAPPROPRIATE
	EASY	DIFFICULT	VERY DIFFICULT	
1. Set infiltration % goal based on soil attributes. 2. Agreed, but modify to encourage and give extra credit for providing SWM above and beyond minimum required.		X		
	X			

1. Agree with recommendation.	X			
1. Most green roof do not use native plants; this is a gap - could offer incentive for using native plants on green roofs but this is difficult as the testing for natives for extensive green roofs has not been done. 2. Agree with recommendation.		X		
	X			

1. Agreed - we need to work with the fire folks on. 2. Developing a list of pre-approved pavements is recommended.		X		
1. Okay. 2. Consult w/ fire marshal. 3. Developing a list of pre-approved pavements is recommended.		X		
	X			
1. Cisterns are currently underutilized in the County. 2. Agreed - but recommend no change		X		

ROW NUMBER	Relevant ESD Type	Section #	Opportunity, Barrier, or Gap	Preliminary Recommended Changes	Relevant Other Code	Notes and Questions
40	general	Sec. 22A-4. Application.		The Forest Conservation Law is written in such a way that basically you have to first own at least 40,000 sq ft before the law applies. Therefore to say that smaller lots are exempt is inaccurate—the law just doesn't apply. Other exemptions in section 22A-5 make this somewhat confusing, actually very confusing. None the less, it is most accurate to match the language above with the description in column C.		
41	general	Sec. 22A-5. Exemptions.	Barrier	Remove exemptions, including those for areas of forest smaller than 40,000 square feet, regardless of hydrologic location; require all properties removing trees to submit a water quality plan		This language would cover the exemptions that likely prompted the first row, and between the two entries the recommendation would be to broaden the scope of the law to cover smaller chunks of forest regardless of whether they sat on small or large properties.
42	general	Sec. 22A-11. Application, review, and approval procedures.	Gap	Include ESD features within plan submissions or as a separate plan requirement (with sediment control plan when applicable) for application, review, and approval.		
43	CHAPTER 26. HOUSING AND BUILDING MAINTENANCE STANDARDS					
44						
45						
46	general	26-2	Barrier	Recommend including reference to exclude properly functioning stormwater drainage features.		This section defines nuisance as any structural condition that may result in unhealthful conditions or substantial damage to another property, including faulty plumbing. While not directly stated, this definition might influence ESD practices that result in temporary ponding of surface waters or rooftop disconnection on small lots where there is the potential to flood basements, redirect runoff to neighboring structures, or promote mosquitoes
47	general	26-2	Gap	Recommend including a definition of structural and non-structural practice maintenance.		Missing definition of structural and non-structural maintenance

COMMENTS	POTENTIAL DIFFICULTY OF IMPLEMENTATION			REPETITIVE, UNNECESSARY, OR INAPPROPRIATE
	EASY	DIFFICULT	VERY DIFFICULT	
1. The forest conservation law has been revised to comply with State requirements. Additional requirements are being worked on now to include smaller lots and individual trees. DEP has been the lead agency. 2. The law is clear. It is an exemption from submitting a forest conservation plan not an exemption from the law. The existing law clearly indicates that if an activity or property is exempt, it is exempt from Article II of the Chapter 22A and not the other articles of the law. Article II is the submission of a forest conservation plan. In addition, many properties less than 40,000 square feet in size are still subject to the law and must provided a forest conservation plan within the subdivision process.				X
1. How many SF of trees is required to make a forest? It should apply to any subdivision that creates 2 lots regardless of size. Or any subdivision that creates a single lot in commercial, multi-family residential zones and special exceptions (churches, etc). Existing platted residential lots in zones smaller than RE-1 (or maybe R-200) should still be exempt. 2. This is ridiculous to ask someone to submit a water quality plan for removing trees. This is definitely a barrier for infill development. A water quality plan is only required in Special Protection Areas and having a water quality plan does not prevent people from removing trees and forest. 3. It is imperative that there not be an across-the-board removal of all exemptions. It is critical that Sec. 22A-5 (s), the exemption for modification to existing developed property if no more than 5000 square feet of forest will be cleared or the modification does not affect any forest in a stream buffer or located on property in a special protection area which must submit a water quality plan and the modification does not require approval of a new subdivision plan				X
1. I can't think of any examples where a sediment control plan would not be required. While I think the referencing of ESD is fine throughout the Code, requiring it in various places may lead to conflicts between those agencies that have lead agency authority for each particular portion of the Code. There are already plenty of interagency conflicts. Let's not add more. 2. Need to tie NRI/FSD, FCP and Sediment Control / SWM plans together. Review by multiple agencies creates conflicts and confusion and unnecessarily delays the permitting process. This review should probably be in DPS. 3. The forest conservation law is designed and structured to protect forest and certain trees. The forest conservation regulation already requires applicants to show the tree protection. Showing ESD on a forest conservation plan can give the impression that approving the forest conservation plan would also approve the stormwater management used. Also if an ESD technique is to be used in a conservation easement it must be shown on the plan, otherwise installing it would be a violation for the site would not co				X
1. Hadn't thought about it that way but should be discussed further. 2. ESD practices need to be designed so that they do not flood the house on the property or divert flow that floods or causes other property damage to adjoining properties. State water laws and civil case law may override any county regulation. 3. Agree with recommendation	X			
1. These actually are in the rewrite of Chapter 19, Article II - not in Chapter 26. Amy Stevens (DEP) should be the lead. 2. Agree with recommendation				X

ROW NUMBER	Relevant ESD Type	Section #	Opportunity, Barrier, or Gap	Preliminary Recommended Changes	Relevant Other Code	Notes and Questions
48	general	26-9 (a)(12) and 26-10(f)	Barrier	Recommend including reference to exclude properly functioning stormwater drainage features.		Requires owners to perform maintenance to prevent public nuisance
49	general	26-6	Gap	WSSC regulations should be reviewed to identify requirements or potential barriers for ESD practices.		Requires all water and sewer to meet WSSC standards. What's in WSSC standards?
50	general	26-9 (a)(11).	Gap	No recommendation.		While this directly applies to green roof, rainwater harvesting, or other potential ESD techniques that may retain or infiltrate runoff adjacent to a structure, this is not considered a barrier because analysis of structural integrity would be part of the required design criteria. This section states that all water must be drained and conveyed from every roof and paved surface so it does not cause dampness in any wall, ceiling, or floor.
51	general	26-5.	Gap	No recommendation; perception that infiltration of water next to basement might prohibit basement from meeting habitable criteria		While not considered a true barrier, the perception that improperly designed, installed, or poorly maintained rooftop disconnection, rain gardens or other on-site practices may prohibit basement use could be a potential implementation barrier.
52	general	26-9 (b)(4) and 26-10(a)	Opportunity	Consider adding reference to overall maintenance of permeable/paved surfaces or other hardscapes to maintain proper stormwater drainage function.		opportunity to elaborate on pervious pavers
53	general	26-9 (b)(5) and 26-10(a)	Gap	Review Chapter 58 to see where mowing is required and if exceptions for stormwater management purposes are allowable. Recommend specifying vegetative maintenance in compliance with approved stormwater management criteria.		Maintenance of grass at <12 inches where required by Chapter 58. What's in Chapter 58?
54	general	26-9 26-10	Opportunity	Recommend referencing maintenance requirements set forth in Chapter 19.		There is no specific reference to proper maintenance of structural or non-structural stormwater management practices related to ESD
55	CHAPTER 40. REAL PROPERTY					
56						
57						
58	general	Article III. Sale of Real Property	Gap	This article outlines all required disclosures at the time of property sale. Consider expanding disclosure requirements to include on-lot ESD practices.		Alternatively, include disclosure in the sales contract and provide a seven-day period for buyer to review documents and opt out of contract. Unless the County has all maintenance requirements, seller must have devices inspected by a PE and certified in good condition. PE certification will include report, check list & photographs.
59						

COMMENTS	POTENTIAL DIFFICULTY OF IMPLEMENTATION			REPETITIVE, UNNECESSARY, OR INAPPROPRIATE
	EASY	DIFFICULT	VERY DIFFICULT	
1. Same comment - However, as stated above, maybe the definition of a public nuisance needs to modified. 2. See comment above. Lot to lot drainage creates numerous complaints to DEP, DOT and DHCA. We cannot promote any code changes that lead to more complaints. 3. Agree with recommendation				X
1. Possible discussion. 2. From MCPS viewpoint, all water and sewer installations under are controlled either as part of a County (DPS) approved sediment control plan or a WSSC sediment control permit. Stormwater management is automatically required if there is a sediment control permit. However, WSSC currently disallows the use of graywater for flushing toilets. We recommend changing WSSC standards to allow gray water reuse.			X	
1. Green roofs and rainwater harvesting will probably require building code review (Chapter 8) and will require stormwater approval (Chapter 19) including provisions for maintenance.		X		
1. I think we need to be realistic however. Drainage and wet basements are problems. 2. This in not really a barrier as ESDs can and should be designed so as not to cause such nuisance conditions.		X		
1. Will be done with maintenance agreements as required in Chapter 19 which will be recorded in land records. 2. MCPS believes that the current code is appropriate and requires no revisions.				X
1. why <12"? Frequency of mowing could also be added here? Basically taller grasses provide more value to the environment overall. Maintenance frequency should include evidence of life cycle of plants being factored in to the plan -- i.e. 3X/year after establishment and monthly during the first year or 9X/year during establishment. 2. Mandatory no mow areas, including forest understory, particularly those in conjunction with stormwater management facilities should be excluded from the mowing requirement.				X
1. Must develop a maintenance protocol for all ESD features. 2. Agree with recommendation	X			
1. Okay. 2. This cannot be at settlement, too many people get overwhelmed at closing and don't read all of the documents. Disclosure should be in the sales contract and the number of devices, location maps and maintenance requirements should be provided with a 7 day period for buyer to review documents and opt out of contract (just like HOA documents). Unless the County has all maintenance requirements, seller must have devices inspected by a PE and certified in good condition. PE certification will include report, check list & photographs. 3. No exception taken	X			

ROW NUMBER	Relevant ESD Type	Section #	Opportunity, Barrier, or Gap	Preliminary Recommended Changes	Relevant Other Code	Notes and Questions
60	CHAPTER 41. RECREATION AND RECREATION FACILITIES					
61						
62	general	Sec. 41-18. Physical standards.	Barrier	Consider stating that stormwater systems should be designed per Chapter 19. Erosion, Sediment Control and Storm Water Management		
63						
64	CHAPTER 49. STREETS AND ROADS					
65	*we are not recommending re-opening the road code					
66	permeable pavement & reinforced turf	49-3(d)	Barrier	Definitions of pavement could include pervious pavement, <del>sand set pavers</del> , and reinforced turf. Curb and gutter definition could include curb breaks to planted areas, planted conveyance channels and bioretention areas.		No definition of pavement or curb and gutter. These words are used throughout the chapter
67	general	49-3 (d) note 9	Opportunity			tree planting in median; could also include specs for bushes or other plants in median
68	landscape infiltration	49-3(d) note 10	Opportunity			Could also include language for other landscape planting in the panel, including bioretention and stormwater conveyance
69	permeable pavement, reinforced turf, landscape infiltration, micro bioretention, swales, stormwater planters, expanded tree pits, stormwater curb extension	49-3(d) note 11	Opportunity	This could include descriptions of how to retain/ <del>infiltrate</del> water in biofiltration areas, swales, etc, or reference other code or description of ways of manage stormwater that includes these elements		required stormwater management
70	general	49-5	Opportunity		Mont. Co. Code 1965, § 24-9; 1912, ch. 790, § 464; 2007 L.M.C., ch. 8, § 1	right to properly drain
71	<del>general &amp; expanded tree pits, stormwater curb extension</del>	<del>49-5(a)</del>	<del>Gap</del>		<del>49-33</del>	<del>Caution—landscape as obstruction; careful consideration and definitions of obstruction must be given—is a tree trunk an obstruction? Perhaps ensuring that actions such as limbing up or trimming always be considered before removal is required. For instance newspaper stands are usually much more of a visual and physical obstruction than a tree trunk, but trees are not usually allowed on corners while newspaper stands are.</del>

COMMENTS	POTENTIAL DIFFICULTY OF IMPLEMENTATION			REPETITIVE, UNNECESSARY, OR INAPPROPRIATE
	EASY	DIFFICULT	VERY DIFFICULT	
1. Okay. 2. Why is this necessary? 3. No exception taken.				

1. Sand set pavers are not the same as permeable interlocking concrete pavers or permeable brick interlocking pavers; they are typically installed on a dense base. Specify open graded subbase for pavers, sized for specific volume capture. 2. Recommend a separate definition for "alternate traffic surfaces".		X		
1. potential agency conflicts. 2. Need to consider vehicle safety offset requirements for trees which will become fixed objects for errant vehicles. Also need to consider location of bushes in median regarding impact to sight distance. 3. Should be restricted to public streets and roads only.			X	
1. Agree with recommendation.	X			
1. If retaining water, set time frame for performance measure; reference the Philadelphia Water Dept. stormwater planter templates developed in coop w/ the Pa Hort Society. 2. This may be conflicting with stormwater management regulations. Suggest mandating that such construction provide stormwater management in accordance with MDE/MCDPS regulations.; (landscape infiltration) This is already covered in the MDE/County stormwater management regulations. Mandate compliance; Agreed, but any practices used must comply with most current acceptable ESD practices approved by MDE and MCDPS.			X	
	X			
1. Do we want to open up the road code again? - I didn't review the rest of the comments concerning Chapt. 49 in detail. However, they seem okay; DOT won't support alternatives they consider unsafe. Clear and nonobstructed intersections are a must for them. 2. A tree trunk over 4 to 5 inches is a fixed object to an errant vehicle, and trees continue to grow after planted. Must recognize fiscal limitations on maintenance (limbing up and pruning). 3. Agree with recommendation - Anything that obstructs safe sight distance on public streets should be prohibited.				X

ROW NUMBER	Relevant ESD Type	Section #	Opportunity, Barrier, or Gap	Preliminary Recommended Changes	Relevant Other Code	Notes and Questions
72	general, landscape infiltration, permeable pavement, micro-bioretentation, swales, stormwater planters, stormwater curb extension, stormwater curb extension	49-10(b)	Gap		49-33	Caution – landscape as obstruction; This only officially OKs ground cover and street trees, what about perennials, shrubs, etc. While it doesn't restrict the aforementioned landscape, perhaps annual and perennial plants should also be covered with clear guidelines for sight and access in this and sections 49-33
73	permeable pavement, reinforced turf, landscape infiltration, micro-bioretentation, swales, stormwater planters, stormwater curb extension	49-25 (c)	Opportunity	great – "Stormwater must be managed on-site including the use of vegetation-based infiltration techniques." This could also include vegetated conveyance techniques, and pervious pavement and reinforced turf		Minimize stormwater runoff; Vegetated conveyance is just as important as infiltration, and sometimes infiltration might not be desirable due to water table or soils, while vegetated conveyance could still be a great option.
74	general	49-26	Opportunity	Add a reference to the relevant code number/section/design	Chapter 22A	Definition - Forest Conservation; excellent!
75	general	49-26	Opportunity	could include height in definition of ground cover, i.e. 6", 12" or ... something that perhaps doesn't make one assume that ground cover is a 2" mat, and also includes perennials and small bushes. - perhaps add the relevant code-design spec number here		Definition - ground cover
76	general	49-26	Opportunity	Is there a related code as to possible replacement requirements, if a specimen tree has to be removed - add the relevant code-design spec number here		Definition - specimen tree
77	general	49-26	Opportunity	reference to specific standards for street tree definition (chapter, etc.)		Definition - street tree
78	landscape infiltration, micro bioretention, swales, stormwater planters, expanded tree pits, stormwater curb extension	49-26	Opportunity	could include swale or vegetated conveyance		any practices used must comply with most current acceptable ESD practices approved by MDE and MCDPS
79	expanded tree pits & stormwater curb extension	49-30	Opportunity			Opportunity - traffic calming - chokers, parking cut-outs, medians, refuge islands, special paving; these could also be encouraged and double duty for stormwater management areas
80	general	49-33(d)	Opportunity			Department of Permitting Services may require any additional right-of-way or storm drain easement necessary for proper drainage; opportunity to ensure or gain more ground for bioretention and vegetated-conveyance

COMMENTS	POTENTIAL DIFFICULTY OF IMPLEMENTATION			REPETITIVE, UNNECESSARY, OR INAPPROPRIATE
	EASY	DIFFICULT	VERY DIFFICULT	
1. Potential conflict about whether to use street trees as a part of the stormwater system. 2. Minimum site distance requirements may need to be spelled out in a table based on MSHA standards or County standards which take into account road speed, grade, entrances and traffic volume. 3. Must recognize fiscal limitation for maintenance (weeding, planting, pruning, etc.) for ground cover, perennials, shrubs, etc. 4. indicate height of vegetation for swales which is allowable for various land uses. 5. Should not extend to include streets/driveways etc on private property.; This is already covered in the MDE/County stormwater management regulations. Mandate compliance; Agreed, but any practices used must comply with most current acceptable ESD practices approved by MDE and MCDPS; The current regulation prohibits any obstructions that impede or hinder safety for vehicles, pedestrians.....The decision as to whether any particular planting is acceptable should be reviewed on a case-by-case basis. This does not appear to be a barrier.				X
1. why is this with permeable pavements? 2. This is already covered in the MDE/County stormwater management regulations. Mandate compliance.				X
	X			
1. Should not extend to include streets/driveways etc on private property.		X		
1. Should not extend to include streets/driveways etc on private property.		X		
1. Agree with recommendation.	X			
1. Agreed, but any practices used must comply with most current acceptable ESD practices approved by MDE and MCDPS.	X			
1. Agree with recommendation	X			
1. In requiring additional right-of-way, need to consider impact on adjoining properties. Very often acquiring additional right-of-way will require acquisition of strips of land from the back yards of residential properties. In more densely populated areas, may require full takes of properties and buildings.			X	

ROW NUMBER	Relevant ESD Type	Section #	Opportunity, Barrier, or Gap	Preliminary Recommended Changes	Relevant Other Code	Notes and Questions
81	general	49-33(e)	Gap	change language to state appropriate drainage (not gutters)		Caution - If a lot or lots front on a public road, the permittee must install sidewalks, curbs, and gutters
82	expanded tree pits	49-33(f)	Gap	ensure these standards include expanded tree pits		caution - trees must be planted in accordance with design standards of the Department of Transportation. And ... street trees must be planted in accordance with the technical manual adopted by the Planning Board under Chapter 22A.
83	general	49-33(h)	Opportunity	ensure that standards and specifications include vegetation based treatments		opportunity - <del>Planning Board-DPS</del> must require the applicant to install or construct drainage structures that the Board finds are necessary or appropriate ... in accordance with applicable design standards and specifications; this could have more emphasis on vegetated treatments
84	general	49-33(l)	Opportunity			<del>Curbs and gutters – this is an excellent section that prevents the installation of curb and gutter to reduce watershed impacts</del>
85	general	49-40 (e)(4, 5)	Opportunity	waive requirements for improvements to surface treatments and drainage		this could expedite and encourage stormwater retrofits if used to its full potential
86	landscape infiltration, micro bioretention, & swales	49-45(d)	Opportunity			Authority to acquire land for proper drainage - this could expedite and encourage stormwater retrofits if used to its full potential
87	general	49-78 (b)(4)(a)	Opportunity			opportunity - rustic road with outstanding natural features; this could be used to protect and encourage native vegetation and tree planting, as well as keeping paved areas to a minimum
88	CHAPTER 50. SUBDIVISION OF LAND					
89						
90						
91	general	50-24(d)	Barrier	Recommend a reference that where a drainage standard or criteria conflicts with the principles of ESD, then the board will consider waiving the standard or criteria.		References to applicable design standards and drainage criteria and WSSC specifications, so any impediments in these documents might carry over. What's in WSSC standards?
92	general	50-25(g)	Barrier	Recommend a reference that where the board requires parallel streets or other increases in impervious cover to accommodate separation of through and local traffic that this impervious cover would be disconnected in accordance with the principles of ESD.		requires parallel streets which may increase impervious cover
93	general	50-25(k)	Barrier	Recommend that the word prohibit be removed and language that the board would consider tracks within rights-of-way on a case by case basis for passenger light rail service where vehicle trip reduction can be demonstrated.		limits light rail which may increase need for roads and street infrastructure
94	CHAPTER 58. WEEDS					
95						
96						
97	general	Chapter 58	Barrier	add in 58-3(b) naturalized areas under management	Ch22 Fire Safety Sec.22-78	possible barrier related to plant height or perceived non managed area; for the most part this is a beneficial code, as it restricts and requires removal of known invasives
98	CHAPTER 59. ZONING					
99						

COMMENTS	POTENTIAL DIFFICULTY OF IMPLEMENTATION			REPETITIVE, UNNECESSARY, OR INAPPROPRIATE
	EASY	DIFFICULT	VERY DIFFICULT	
1. Gutters may well be appropriate in certain circumstances.			X	
1. Potential conflict between street tree requirements and stormwater management. 2. Agree with recommendation.			X	
1. Planning Board or DPS? 2. Agree with comment.	X			
1. The use of curb and gutter can be of great value to route runoff into a closed system to direct runoff to an ESD stormwater management practice. The use of curb and gutter should not be banned.				X
1. Agree with recommendation.	X			
1. Agree with recommendation.	X			
	X			

1. Waiver by the proper agency is okay.		X		
1. Alleys add to impervious surfaces and are becoming common in the Neo-traditional communities that are very popular right now.		X		
	X			

	X			
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ROW NUMBER	Relevant ESD Type	Section #	Opportunity, Barrier, or Gap	Preliminary Recommended Changes	Relevant Other Code	Notes and Questions
100						
101	green roof & rainwater harvesting	Sec. 59-A-1.73. Air rights development and subsurface development within public rights-of-way.	Opportunity	Air rights could allow green roofs and living walls to overhang into ROWs; Stormwater runoff could be directed to underground storage tanks/structures within ROWs		
102	general	Sec. 59-A-2.1. Definitions.	Opportunity	Include definition for ESD, stormwater, permeable, rain garden, cistern, swale, compost, etc.	State and County stormwater management regulations	
103	general	59-A-3.32. Building permit.	Opportunity	Show stormwater drainage in plan and include location of ESD opportunities in building permit		
104	general	59-A-4.22. Data to accompany petition for special exception.	Opportunity	Include ESD opportunities in permit application		
105	green roof	59-A-5.42. Height of public buildings.	Opportunity	Allow building to exceed maximum height if for green roof structure or vegetation		"In any zone wherein public and quasi-public buildings are permitted, such buildings may be erected to a height not over 120 feet; but the minimum front, rear and side yards shall be increased one foot for each one foot by which such building exceeds the height limit herein established for the zone in which such building is erected."
106	green roof	Sec. 59-B-1.1. Belfries, chimneys, etc.	Opportunity/Barrier	Add green roofs to list of allowable items exempt from height limits on roofs, especially in the case of shade structures for intensive green roofs and trees or other tall planting that might exceed height restriction. These exceptions should also be allowed to occupy more than the 25% limit specified. Allowable uses of roof space in the context of a green roof should also be expanded	59-A-5.42. Height of public buildings.	
107	green roof	Sec. 59-B-3.1. Steps, terraces, and porches.	Opportunity	Perhaps allow greater extension into yard if ESD measures are taken, roof can extend if connected to a rainwater collection system		
108	rainwater harvesting	Sec. 59-B-3.1. Steps, terraces, and porches.	Barrier	Allow greater extension into yard if necessary to accommodate rainwater harvesting system (roof extension to capture more water, gutter and pipe system to lead into collection cistern/barrel, or foundation for cistern/barrel if considered part of steps, terrace, or porch).		

COMMENTS	POTENTIAL DIFFICULTY OF IMPLEMENTATION			REPETITIVE, UNNECESSARY, OR INAPPROPRIATE
	EASY	DIFFICULT	VERY DIFFICULT	
1. Agree with recommendation.	X			
1. We need to be mindful of definitions, especially if ESD can mean many things and may not necessarily apply to each situation or development. Use words like "such as" or "not limited to". I think they are creating a barrier here. 2. Provide a reference to the State and County stormwater management regulations. Do not create a potentially conflicting requirement.		X		
1. Done as a part of Chapter 19 (and sometimes Chapter 8) - no need to duplicate. 2. The stormwater plans are shown in a site plan and may not accompany each building permit. Building permit stage is too late to show ESD-rather needs to be identified during the site plan review process, especially if easements are needed that need to go on the record plat. 3. The stormwater management and sediment control plans and permits are already pre-requisites for obtaining a building permit.				X
1. As a reference to Chapter 19 requirements - again no need to confuse lead agency issues. 2. The stormwater management and sediment control plans and permits are already pre-requisites for obtaining a building permit.				X
1. Agree with recommendation.	X			
1. Some consideration for roofs that are in the shade of adjacent taller structures may need to be made/ balance of building heights so that one building awarded extra height for the green roof does not end up precluding a green roof on the adjacent roof. 2. Agree with recommendation.		X		
1. Agree with recommendation.	X			
1. Agreed.	X			

ROW NUMBER	Relevant ESD Type	Section #	Opportunity, Barrier, or Gap	Preliminary Recommended Changes	Relevant Other Code	Notes and Questions
109	general	59-C-1.31. Land uses., 59-C-1.71. Land uses.; Sec. 59-C-2.3. Land uses.; Sec. 59-C-4.2. Land uses.; 59-C-5.4392. Regulations. 59-C-6.22. Land uses.	Opportunity	Include ESD practices (compost, swales, rainwater harvesting, etc) as <del>permitted</del> acceptable uses		Make sure uses such as wells, bioswales, rainwater collecting are <del>permitted</del> acceptable, maybe include an environmental section
110	rain garden	59-C-1.325. Maximum Distance of Lot from a public Street (in Feet)	Gap	Consider increasing if it allows inclusion of rain garden		Possible barrier depending on scenario
111	rainwater harvesting	59-C-1.326. Yard Requirements for an Accessory Building or Structure (in Feet) <sup>7</sup> .	Opportunity	Add accessory structures for rainwater harvesting to this setback exception		See notes on allowances for building with solar equipment, may be rationale to establish something for ESD
112	general, green roof	59-C-1.327. Maximum Building Height (in Feet).	Barrier	Allow greater building heights with inclusion of green roofs, stormwater collection, or with a smaller footprint and increased green space		See if greater heights can be allowed for green roofs or stormwater collection
113	general	59-C-1.34. Coverage and Green Area.	Opportunity			
114	green roof	59-C-1.34. Coverage and Green Area.	Opportunity	Green roofs could be considered green area in dense developments		
115	permeable pavements	59-C-1.353. Streets.	Opportunity	Encourage interior streets to use permeable pavement	See Streets and Road codes	Encourage but do not require due to need for loading, durability, and maintenance
116	disconnection of non-rooftop runoff, swales, expanded tree pits, stormwater curb extension	59-C-1.353. Streets. Interior streets which are not publicly dedicated shall be improved to the same standards as public streets.	Opportunity	Encourage interior streets be disconnected from typical sewer drainage	See Streets and Road codes	encourage but do not require
117	general	<del>59-C-1.395. Special provisions for TDR developments.</del>	Opportunity			<del>provides language for environmental reasons being rationale for alternate development</del>
118	general	<del>Sec. 59-C-1.5. Cluster development.</del>	Opportunity	Include ESD as purpose of this type of development		
119	general	<del>9-C-1.524. Common Open Space</del>	Opportunity	Include ESD elements as part of common open space		
120	green roof	9-C-1.524. Common Open Space	Opportunity	Intensive green roofs could become common open space, especially where density limits open space area available on the ground		

COMMENTS	POTENTIAL DIFFICULTY OF IMPLEMENTATION			REPETITIVE, UNNECESSARY, OR INAPPROPRIATE
	EASY	DIFFICULT	VERY DIFFICULT	
1. These are not permitted uses as defined in the Code. They are measures for compliance. Agree that they may need to be defined and referenced as acceptable. 2. Reference the above comment. The zoning ordinance doesn't prevent ESD practices now-why make a change? Also, an ESD practice will get missed so why put them in and have to do a ZTA later on down the road to change the ordinance. They are creating a barrier here. 3. There is no need to recreate new environmental regulations under zoning. They are already quite well defined and set forth in current State and County stormwater management regulations.		X		
1. Agree with recommendation.	X			
1. The best location for some ESD practices is within setbacks.	X			
1. Also should trade greater heights for more green space on lot. 2. Agree with recommendation.		X		
1. We may be going the opposite way with some zones that are currently being revised - changing green space requirements to public space requirements. 2. Similar to GAR in Seattle? 3. Coverage and green area are more challenging in commercial zones where the size of the use is sometimes governed by how much parking can fit on the site, which typically competes with green space.			X	
1. Agree with recommendation	X			
1. I agree that portions of paving within the right of way can pervious. However, it does have limitations based on loading and number of trips. The last thing we want to do is to require something that fails quickly. 2. Encourage, but not require. Permeable pavements must be able to support heavy traffic loading. They are much less stable and more costly to maintain than conventional pavement than conventional pavement.			X	
1. Encourage, but not require; agree with recommendation for swales.		X		
1. From here on down - coordinate the referencing of ESD with the rest of the Code. 2. I don't understand this comment. Do we want to give additional density for providing ESD, which will be a requirement by default. Remove the comment.				X
1. There is no need to recreate new environmental regulations under zoning. They are already quite well defined and set forth in current State and County stormwater management regulations.				X
1. Common open space is typically reserved for HOA properties and rec. facilities. There could be an opportunity for ESD but could also run into issues with useable space for the neighborhood. 2. There is no need to recreate new environmental regulations under zoning. They are already well defined and set forth in current State and County stormwater management regulations.				X
	X			

ROW NUMBER	Relevant ESD Type	Section #	Opportunity, Barrier, or Gap	Preliminary Recommended Changes	Relevant Other Code	Notes and Questions
121	general	59-C-1.5.53. Streetscape.	Opportunity	Encourage ESD in streetscapes as appropriate to type of development and density		
122	general	59-C-1.5.55. Parking. (from 07/09 amendment)	Opportunity/Barrier	Provide more detail about ESD practices in the context of parking		Also recommend increasing tree canopy % coverage
123	permeable pavements, reinforced turf, & sheetflow to conservation area	59-C-1.5.55. Parking. (update from 07/09 amendment)	Opportunity/Barrier	specify Encourage use of permeable pavement for parking surfaces (and give partial SWM credit as pervious surface?); specify-encourage use of reinforced turf for parking surfaces, especially for overflow parking; specify drainage of parking lot runoff into conservation area when appropriate		
124	disconnection-of-non-rooftop-runoff & enhanced filters	59-C-1.5.55. Parking. (update from 07/09 amendment)	Opportunity/Barrier	specify drainage of parking lot runoff into ESD feature, disconnected from sewer drainage or direct waterway drainage; specify enhanced filters of parking lot runoff		
125	landscape infiltration, micro bioretention, & swale	59-C-1.5.55. Parking. (update from 07/09 amendment)	Opportunity/Barrier	specify landscape infiltration of parking lot runoff		
126	general	59-C-1.5.7. Special Regulations for the Optional Method of Development	Opportunity			Offers Incentive Density for features including: Bio-retention and Stormwater Recharge, Conveyed Parkland, Green Wall, LEED Rating, Rainwater Reuse, Tree Canopy, Vegetated Area, Vegetated Roof
127	general	59-C-1.627. Green area	Opportunity			Stipulate what ESD features the green area should/can include
128	green roof	59-C-1.627. Green area	Opportunity	Green roofs could be considered green area in dense developments		Stipulate what ESD features the green area should/can include
129	stormwater planters & expanded tree pits	59-C-1.628. Additional Requirements.	Opportunity	language requires preservation of trees		
130	permeable pavements	59-C-2.21. Roads.	Opportunity	Encourage roads to use permeable pavement		Opportunity to stipulate stormwater and pavement requirements
131	disconnection-of-non-rooftop-runoff	59-C-2.21. Roads.	Opportunity	Encourage interior streets be disconnected from typical sewer drainage		Opportunity to stipulate stormwater and pavement requirements

COMMENTS	POTENTIAL DIFFICULTY OF IMPLEMENTATION			REPETITIVE, UNNECESSARY, OR INAPPROPRIATE
	EASY	DIFFICULT	VERY DIFFICULT	
1. There is a huge barrier with the comments regarding streetscape that haven't been well thought out regarding the type of development appropriate for an area. ESD is not "one size fits all". It needs to be sensitive to the urban environment but tends to focus on the suburban and rural environments. This could be a barrier.			X	
1. Agree this could be both but makes more sense if the ordinance is changed to a max. parking to allow for better design and possibly more green area in the parking lot. Parking is typically a function of the use/size of the building.		X		
1. Permeable pavements are allowed already. Why specify the use of permeable pavement when its viability is dependent upon specific existing site conditions that may or may not exist.; agree with recommendation for sheetflow to conservation area.		X		
1. Already handled in Chapter 19. 2. this is not always possible and should not be mandated; Specify as one potential method, but do not legislate as only option. Provide in accordance with most current applicable MDE/MCDPS stormwater management regulations.				X
1. Specify as one potential method, but do not legislate as only option. Provide in accordance with most current applicable MDE/MCDPS stormwater management regulations. 2. There are differences in the recommendations is an inconsistency in the recommendations. Section 59-15.55 “specify” micro bioretention of parking lot runoff while the other recommendation “include” micro bioretention. As previously discussed, any specific technique will not fit every location. The Zoning Ordinance should not proscribe how the Stormwater Management regulations are achieved. Further, if infiltration is adequate and proven, wouldn’t Landscape Infiltration be a better practice? Maybe. Maybe not. Recommendation: Amend the recommendation to recognize the use of Micro Bioretention, but don’t require		X		
1. See comments regarding streetscape. ESD needs to be appropriate to the area re: urban vs. rural.		X		
1. The definition of green area is very broad. Changing the def. Will be difficult but does not prevent ESD practices. 2. This is the purview of the County Department of Permitting Services and shouldn't be re-addressed in zoning.				X
1. Agree with recommendation.	X			
1. Agree with recommendation.	X			
1. Agree with preliminary recommendation.	X			
1. Already handled in Chapter 19. 2. Note need for plants in ESD areas which receive road runoff should have salt tolerance. 3. Encourage, but not require.				X

ROW NUMBER	Relevant ESD Type	Section #	Opportunity, Barrier, or Gap	Preliminary Recommended Changes	Relevant Other Code	Notes and Questions
132	swales, expanded tree pits, & stormwater curb extension	59-C-2.21. Roads.	Opportunity	Encourage interior streets to direct runoff into bioswales in street median or on one or both sides of the street; Encourage interior streets to include <b>salt-tolerant</b> street trees with tree pits which can capture and filter stormwater	See Streets and Road codes	Opportunity to stipulate stormwater and pavement requirements
133	rainwater harvesting	59-C-2.415. Courts.	Barrier	allow inner courts for rainwater collection		
134	general	59-C-2.444. Development standards applicable to the optional method of development.	Opportunity	ESD could protect surrounding and regional natural resources, such as receiving water bodies, from stormwater pollution		language establishes mitigation of impacts to natural resources as justification for alternative development
135	sheetflow to conservation areas	59-C-2.444. Development standards applicable to the optional method of development.	Opportunity	Suggest conservation areas can be used for sheetflow infiltration if it is demonstrable that there will be no adverse impact to sensitive conservation areas		Language establishes mitigation of impacts to natural resources as justification for alternative development
136	swales & stormwater curb extension	59-C-3.72. Streets.	Barrier	street widths should be allowed to widen if extra width accommodates bioswales in street median	See Streets and Road codes	
137	reinforced turf	59-C-3.73. Pedestrian ways.	Opportunity	Encourage pedestrian ways which are not heavily trafficked <b>and do not have ADA access requirements</b> to use reinforced turf		Opportunity for specifying pavement types
138	general	59-C-4.311. Lot coverage and building height.	Gap	Increase minimum for green space to allow for ESD		only 10% minimum of lot to green space
139	green roof	59-C-4.311. Lot coverage and building height.	Barrier	Increase minimum for green space to allow for ESD and allow vegetated portion of green roofs to contribute towards this when high density		Only 10% minimum of lot to green space
140	general	<del>59-C-4.335. Green area</del>	<del>Opportunity</del>	<del>incorporate ESD into language of green space requirements</del>		
141	green roof	59-C-4.335. Green area	Opportunity	incorporate ESD into language of green space requirements		Green area must constitute at least 40 percent of the area of the lot. The green area, including the required setback areas, must be landscaped by the planting and maintenance in good condition of grass, shrubs, trees or other ground cover in accordance with a plan approved by the Department.
142	<del>general, green roof</del>	<del>59-C-4.344. Green area.</del>	<del>Gap/Barrier</del>	<del>increase minimum for green area to allow for ESD, allow green roofs to contribute to green space area in high density areas</del>		
143	general	<del>59-C-4.386. Green area.</del>	<del>Opportunity</del>	<del>include ESD requirements for green area</del>		<del>at least 45% of lot is green area</del>
144	<del>general, green roof</del>	<del>59-C-4.393. Green area.</del>	<del>Opportunity</del>	<del>include ESD requirements for green area; increase minimum for green area to allow for ESD, allow green roofs to contribute to green space area in high density areas</del>		<del>at least 50% of lot is green area</del>

COMMENTS	POTENTIAL DIFFICULTY OF IMPLEMENTATION			REPETITIVE, UNNECESSARY, OR INAPPROPRIATE
	EASY	DIFFICULT	VERY DIFFICULT	
1. Potential conflict between street tree requirements and stormwater management. 2. Agree with recommendation.			X	
1. Allow, but do not mandate.		X		
1. Same comment as above. 2. Agreed.		X		
1. Agree with recommendation.	X			
1. Agree with recommendation.	X			
1. Agree with preliminary recommendation except where such pavements must be ADA accessible. Snow removal from pedestrian turf areas is virtually impossible.		X		
1. This goes back to parking in order to get additional green on a site. Building height in some zones would need to be increased to provide less parking on surface but would offer opportunity for underground parking.		X		
1. Agree with recommendation.	X			
1. The definition of green area is very broad. Changing the def. Will be difficult but does not prevent ESD practices. 2. This is the purview of the County Department of Permitting Services and shouldn't be re-addressed in zoning.				X
1. I did not review in detail - However, there may be a conflict in conservation overlay zones which have an impervious cap. The cap has been used to maintain a relatively low density. We will need to clearly define green space versus perviousness. 2. Agree with recommendation.		X		
1. The definition of green area is very broad. Changing the def. Will be difficult but does not prevent ESD practices. 2. Agree with the recommendation to allow green roofs to contribute to green area requirement, but should not increase minimum required green area as this further limits developability.				X
1. This is the purview of the County Department of Permitting Services and should not be re-addressed in zoning; Agree with the recommendation to allow green roofs to contribute to green area requirement, but should not increase minimum required green area as this further limits developability.				X
1. This is the purview of the County Department of Permitting Services and shouldn't be re-addressed in zoning; Agree with the recommendation to allow green roofs to contribute to green area requirement, but should not increase minimum required green area as this further limits developability.				X

ROW NUMBER	Relevant ESD Type	Section #	Opportunity, Barrier, or Gap	Preliminary Recommended Changes	Relevant Other Code	Notes and Questions
145	general	59-C-4.414. Coverage limitations.	Gap	Green area to cover a larger percentage of the site, <del>not including impervious surfaces such as sidewalks and other paving</del>		
146	green roof	59-C-4.414. Coverage limitations.	Barrier	Increase minimum for green area to allow for ESD, allow green roofs to contribute to green space area in high density areas		
147	general	59-C-5.21. Allowable uses.	Opportunity	include ESD practices as a <del>permitted-allowable</del> uses		
148	general	59-C-5.322. Requirement for landscape plan.	Opportunity	Include ESD requirements in landscaping requirements		In the R&D zone, the preliminary plan of subdivision must include a landscape plan and a plan for the preservation of natural features.
149	green roof	59-C-5.322. Requirement for landscape plan.	Opportunity	Include green roofs in landscape plan as part of landscape		In the R&D zone, the preliminary plan of subdivision must include a landscape plan and a plan for the preservation of natural features.
150	permeable pavements	59-C-3.73. Pedestrian ways.	Opportunity	Encourage pedestrian ways to use permeable pavement		Opportunity for specifying pavement types
151	general	59-C-5.43. Special regulations-I-3 zone.	Opportunity	Include ESD in green space		green space and preservation of natural features
152	green roof	59-C-5.43. Special regulations-I-3 zone.	Opportunity	Include green roofs in green space		Green space and preservation of natural features
153	general, green roof	59-C-5.432. Landscaping.	Opportunity	require or include ESD in landscape features; include green roofs if visible and/or intensive/usable		
154	rainwater harvesting	59-C-5.434. Enclosed building and temporary outdoor storage:	Barrier	allow permanent cisterns/rainbarrels for rainwater harvesting		
155	general, green roof	59-C-5.4391. Purpose	Opportunity	define "sound environmental practices" by including ESD features		It is also the purpose to promote development that follows sound environmental principles and maximizes preservation of natural features.
156	general	59-C-5.46. Environmental control provisions applicable in all of the industrial zones.	Opportunity	recommend ESD as a preferable method of stormwater management		
157	general	59-C-5.471. Purpose.	Opportunity			see language in note about role of sound environmental practices
158	general	59-C-5.473. Development standards.	Opportunity/Barrier	Perhaps an incentive? Perhaps severely limiting functional green space		
159	green roof	59-C-5.473. Development standards.	Opportunity/Barrier	Continue to encourage below grade parking with green roofs but consider adding intensive above grade green roofs as green space if accessible for passive or recreational use.		
160	<del>general</del>	<del>59-C-5.474. Landscaping guidelines.</del>	<del>Opportunity</del>	<del>include stormwater function as part of landscaping requirements</del>		
161	green roof	59-C-6.23. Development standards.	Opportunity	Require green roofs on high density buildings which have little opportunity for green space on the ground		

COMMENTS	POTENTIAL DIFFICULTY OF IMPLEMENTATION			REPETITIVE, UNNECESSARY, OR INAPPROPRIATE
	EASY	DIFFICULT	VERY DIFFICULT	
1. This is a gap since green area currently includes sidewalks and other paving areas.		X		
1. Agree with the recommendation to allow green roofs to contribute to green area requirement, but should not increase minimum required green area as this further limits developability.		X		
1. See comments in row 71. Agreed - but make it for all zones/properties.		X		
1. We don't currently have a landscape manual since the zoning ordinance is being re-written but could include ESD practices in the proposed regulations under landscaping. 2. MCDPS reviews and approves all ESD landscaping. This is the purview of the County Department of Permitting Services and should not be re-addressed in zoning.		X		
1. Consider as credit toward afforestation (landscape credit).	X			
1. Encourage, but not require. Permeable pavements must be able to support heavy traffic loading. They are much less stable and more costly to maintain than conventional pavement.		X		
1. Agree with recommendation.	X			
	X			
1. Should not apply to all conditions. Perhaps limit to site-specific conditions; Include (for green roof) visible from upper story window space from adjacent buildings.		X		
	X			
1. Agree with recommendation	X			
1. Fine, but the decision as to whether the "maximum extent practicable must remain with MCDPS and not also controlled by zoning officials.		X		
	X			
1. Should not be applicable to MCPS facilities.		X		
1. Should not be limited solely to accessible spaces. In some cases, safety issues mandate that access be limited, but there may still be visibility.		X		
1. Problematic since the SWM plans are reviewed and permitted by DPS. A site plan/landscape plan might be reviewed a little differently. 2. Not all landscaping should serve as stormwater management. SWM plantings are specifically selected to promote water quality with tolerant plantings.				X
1. Should be encouraged, but not be a requirement. 2. It is inappropriate for the Zoning Ordinance to require a specific stormwater management technique like green roofs on high density buildings in Sect 59-C-6.23. There are many ways to achieve ESD that do not require a green roof. In addition, there are buildings where a green roof may not be desirable. Again, proscribing specific features of ESD in the Zoning Ordinance limits, rather than expands the options. Recommendation: Delete this recommendation from the table.		X		

ROW NUMBER	Relevant ESD Type	Section #	Opportunity, Barrier, or Gap	Preliminary Recommended Changes	Relevant Other Code	Notes and Questions
162	rainwater harvesting	59-C-6.23. Development standards.	Opportunity	Consider using rainwater harvesting (especially in the form of underground cisterns) to detain rainwater from high density developments with little on-site infiltration capacity; allow harvested rainwater to be re-used for no-potable uses within buildings such as toilet flushing		State plumbing codes may prohibit use of harvested rainwater for anything other than irrigation-are currently a barrier to the reuse of harvested rainwater for non-potable purposes inside buildings due to requirements for metering and treatment before re-use
163	general	59-C-6.24. Existing buildings and building permits.	Gap	Allow changes to allow for improved stormwater management or green roofs, see language in notes about building and fire code		
164	general	Sec. 59-C-7.1. P-D zone-Planned development zone.	Opportunity/Gap	to allow for more specific stormwater ESD requirements, see language in notes		
165	general	59-C-7.133. Other uses.	Opportunity/Gap	include ESD features as allowable permitted uses for all zones/properties		
166	general	59-C-7.14. Density of residential development.	Opportunity/Gap	provide option to increase density if highest standard of ESD is met		
167	general	59-C-7.16. Green area.	Opportunity/Gap	include ESD requirements in green areas with appropriate conditions		
168	general	59-C-7.231	Opportunity/Gap	make sure include ESD plans are included- on site plan submitted for approval		
169	permeable pavements, disconnection of non-rooftop runoff, swales, expanded tree pits, stormwater curb extension	59-C-7.37. Reservation of land.	Opportunity/Gap	Encourage streets to use permeable pavement and drain into an ESD feature and disconnect from storm sewers		
170	general	59-C-7.422. Permitted uses.	Opportunity/Gap	include ESD features as allowable permitted uses		
171	enhanced filters	59-C-7.58. Parking facilities.; 59-C-7.772. Surface parking.	Opportunity	include enhanced filters in landscaping requirements for parking, define "appropriately landscaped"; include soil health standard for filtering landscape		see language about landscaping for parking
172	general	59-C-7.462. Green area.	Opportunity	include ESD features as part of green space		65% of land required to be green space
173	permeable pavements, disconnection of non-rooftop runoff, swales, expanded tree pits, stormwater curb extension	59-C-7.482. Roads.	Opportunity/Gap	Include permeable pavement as part of required street/road performance; Include stormwater management as part of required street/road performance		
174	general	59-C-7.50. Objectives and purpose.	Opportunity	include ESD as part of open space for function and aesthetics		
175	general	59-C-7.56. Minimum green area and amenity requirements.;59-C-7.65. Minimum green area and amenity.	Barrier	establish importance of stormwater management as an important function when considering reducing amount of required green space		add in performance standard for ESD in terms of WQ/ vol. reduction

COMMENTS	POTENTIAL DIFFICULTY OF IMPLEMENTATION			REPETITIVE, UNNECESSARY, OR INAPPROPRIATE
	EASY	DIFFICULT	VERY DIFFICULT	
1. Agree with recommendation	X			
1. DPS reviews SWM for existing sites when coming in for redevelopment now. There should be some exemption if an addition is covering ex. Paved surface area. 2. Agreed.		X		
1. The Zoning Ordinance should not dictate how to comply with stormwater management regulations. The comments on Section 59-C-5.46 and 7.1 recommend “ESD as a preferable method of stormwater management.” The Stormwater Management Regulations will specify the requirements. If history has shown us anything on SWM it is that preferences will change. If there is an impediment to ESD in these sections it should be explicitly identified with a recommendation to amend or remove it so it isn't in conflict with SWM regulations. Recommendation: Delete this recommendation from the table.		X		
1. Agreed - but make it for all zones/properties.		X		
1. Recommend implementation.	X			
1. Not all green areas are conducive to ESD construction.		X		
	X			
1. Already handled in Chapter 19. 2. Encourage, but not require. Permeable pavements must be able to support heavy traffic loading. They are much less stable and more costly to maintain than conventional pavement than conventional pavement; agree for swales.		X		
1. Agreed - but make it for all zones/properties.		X		
1. Landscaping for parking needs to include soil health standard. 2. Agree with recommendation.	X			
1. 65% green space requirement on school sites in virtually impossible. The 65% requirement should be more realistically tailored to the type of development.		X		
1. Already handled in Chapter 19. 2. Encourage, but not require. Permeable pavements must be able to support heavy traffic loading. They are much less stable and more costly to maintain than conventional pavement than conventional pavement; agreed (for disconnection of non-rooftop runoff and swales).		X		
1. Encourage, but do not require.		X		
1. Add in performance standard for ESD in terms of WQ/ vol. reduction. 2. Agree with recommendation	X			

ROW NUMBER	Relevant ESD Type	Section #	Opportunity, Barrier, or Gap	Preliminary Recommended Changes	Relevant Other Code	Notes and Questions
176	permeable pavements, reinforced turf, disconnection of non-rooftop runoff, micro-bioretenction, swales	59-C-7.58. Parking facilities.; 59-C-7.772. Surface parking.	Opportunity	include permeable pavement, reinforced turf, and micro bioretention in requirements for parking; include disconnection of parking surface drainage in landscaping requirements for parking, define "appropriately landscaped"		see language about landscaping for parking
177	landscape infiltration	59-C-7.58. Parking facilities.; 59-C-7.772. Surface parking.	Opportunity	include ESD features in landscaping requirements for parking, define "appropriately landscaped"		See language about landscaping for parking
178	general	59-C-7.592. Contents of concept plan and procedures for approval	Opportunity/Gap	include ESD features in concept plan		
179	general	59-C-7.71. Objectives and purpose.	Opportunity	include ESD as a method of environmental protection		determine carbon sequestration potential of good soil practices (Marin County Study)
180	general	59-C-9.21. Intent of the Rural zone.	Opportunity	include ESD as a method of environmental protection; filtration could double as protection for waterways in agricultural areas from agricultural runoff		See language about preservation of natural areas
181	general	59-C-9.24. Purpose of the Rural Service zone.	Opportunity	include ESD as a type of landscaping around impervious surfaces or to double as infiltration and screening when soil characteristics allow		
182	general	Sec. 59-D-1.3. Contents of development	Opportunity/Gap	require ESD plan/map in development plan; require that many smaller ESD features capture stormwater runoff closer to the source rather than draining an entire development through pipes into a central stormwater management basin		
183	general & sheetflow to conservation areas	59-D-1.61. Findings.	Opportunity/Gap	include ESD as a required finding in site plan review; build off of existing language in code; emphasize ESD as a method of erosion prevention and waterway protection; build off of existing language in code to suggest sheetflow into a conservation area as a way to preserve natural vegetation while managing stormwater assuming appropriate steps are taken to prevent erosion of or impact to conservation area		develop performance standards for ESD related to environmental conditions that ESD addresses
184	soil compost amendments	59-D-1.61. Findings.	Opportunity/Gap	include ESD as a required finding in site plan review; build off of existing language in code; recommend soil compost amendments as method of soil preservation		specify depth of compost to be added and range of applications for first choice to be compost
185	general	Sec. 59-D-2.6. Amendment.	Opportunity	allow ESD features to be a minor amendment		
186	general	Sec. 59-D-4.3. Contents of diagrammatic plan.	Opportunity	consider stormwater runoff potential of existing characteristics and recommend ESD		

COMMENTS	POTENTIAL DIFFICULTY OF IMPLEMENTATION			REPETITIVE, UNNECESSARY, OR INAPPROPRIATE
	EASY	DIFFICULT	VERY DIFFICULT	
1. Already handled in Chapter 19. 2. Encourage, but not require. Permeable pavements must be able to support heavy traffic loading. They are much less stable and more costly to maintain than conventional pavement than conventional pavement; Allow, but do not mandate; (disconnection of non-rooftop runoff & swales) this is not always possible, particularly on existing sites being re-developed in part, and should not be mandated.; Specify as one potential method, but do not legislate as only option. Provide in accordance with most current applicable MDE/MCDPS stormwater management regulations.				X
1. Specify as one potential method, but do not legislate as only option. Provide in accordance with most current applicable MDE/MCDPS stormwater management regulations.		X		
1. Agree with recommendation.	X			
1. Determine carbon sequestration potential of good soil practices (Marin County Study). 2. Agree with recommendation.		X		
1. Agree with recommendation.	X			
1. Infiltration is not always possible. It depends upon soil type and characteristics.		X		
	X			
1. Develop performance standards for ESD related to environmental conditions that ESD addresses. 2. No comment; agree with recommendation for sheetflow to conservation areas.		X		
1. Specify depth of compost to be added and range of applications for first choice to be compost.		X		
1. Agree with recommendation.	X			
1. Agree with recommendation	X			

ROW NUMBER	Relevant ESD Type	Section #	Opportunity, Barrier, or Gap	Preliminary Recommended Changes	Relevant Other Code	Notes and Questions
187	permeable pavements, reinforced turf, disconnection of non-rooftop runoff, enhanced filters, landscape infiltration, micro bioretention, swales	Division 59-E-2. Plans and Design Standards.	Opportunity/Gap	<del>include requirements for</del> Encourage permeable paving, reinforced turf, enhanced filters, landscape infiltration, micro bioretention, and swales in parking facility design and materials; include requirements for disconnection from typical storm drains to sewer in parking facility design and materials		
188	general	Sec. 59-E-2.5. Drainage.	Opportunity	include stormwater management features in drainage category		
189	general	Sec. 59-E-2.7. Landscaping.	Barrier	include stormwater management features in landscaping category		
190	landscape infiltration, swales, expanded tree pits	59-E-2.71. Landscape strip area adjacent to a street right-of-way.	Gap	require this strip to be a stormwater swale, graded to receive runoff from parking or road or both <del>when adequate space is available</del>		require salt tolerance of all plants in this form of ESD
191	landscape infiltration, micro bioretention, rain garden, swale, stormwater planters, expanded tree pits	59-E-2.72. Perimeter landscape area adjoining property other than a street right-of- way.	Opportunity/Barrier	Evaluate spacing of shade trees for <del>tree health sufficiency</del> . Choose salt-tolerant planting for ESD which collects sidewalk and/or street runoff.		
192	landscape infiltration, micro bioretention, rain garden, swale, stormwater planters, expanded tree pits	59-E-2.73. Internal landscaping of surface parking facility.	Opportunity/Gap	increase minimum landscaping requirement to 10 or 15%; include stormwater management features in landscaping category		
193	landscape infiltration, micro bioretention, rain garden, swale, stormwater planters, expanded tree pits	59-E-2.74. Minimum size of planting islands within internal landscape area.	Opportunity/Gap	Size tree planting islands to be large enough to avoid impacts to tree health due to lack of soil cubic feet depending on tree species and other conditions		
194	landscape infiltration, micro bioretention, rain garden, stormwater planters, expanded tree pits	59-E-2.75. Type of plant material	Gap	include <del>requirement for X% of plant material to be native</del> <del>plant requirement</del> . Offer incentive for larger %		
195	landscape infiltration, swales, expanded tree pits	59-E-2.83. Parking and Loading facilities for special exception uses in residential zones.	Gap	increase shade requirement; require tree planting areas to be of adequate size to support tree health; require planted area to serve as stormwater retention/filtration; recommend using native tree species		recommend soil decompaction standard
196	general	Sec. 59-E-3.7. Schedule of requirements.	Barrier	change parking requirements so that they are maximum or median requirements. If median requirements, allow for some flexibility above or below the median requirement.		Parking requirements are set as minimum requirements.
197	general	Sec. 59-E-4.2. Parking facilities plan objectives.	Gap	include stormwater management and ESD in objectives of parking facility		

COMMENTS	POTENTIAL DIFFICULTY OF IMPLEMENTATION			REPETITIVE, UNNECESSARY, OR INAPPROPRIATE
	EASY	DIFFICULT	VERY DIFFICULT	
1. Already handled in Chapter 19. 2. Encourage, but not require. Permeable pavements must be able to support heavy traffic loading. They are much less stable and more costly to maintain than conventional pavement than conventional pavement; Allow, but do not mandate; (disconnection of non-rooftop runoff) this is not always possible, particularly on existing sites being re-developed in part, and should not be mandated; agree with recommendation for enhanced filters and swales; Current state law requires ESD for all site design requiring stormwater management. County regulations should mirror state requirements.			X	
1. Agree with recommendation	X			
1. Not all landscaping should serve as stormwater management. SWM plantings are specifically selected to promote water quality with tolerant plantings.		X		
1. Require salt tolerance of all plants in this form of ESD. 2. This is not always possible, particularly on existing sites being re-developed in part, and should not be mandated.			X	
1. Sufficiency for what? Soil volume for tree health? Shading potential?; develop list of trees which can live in this type of brine infused environment. 2. Agree with recommendation.		X		
1. Okay, as long at the landscaping is consistent with stormwater design requirements and does not interfere with maintenance. 2. Recommend aforestation credit for ESD plantings as landscape credit, but not increasing landscape % requirement.		X		
1. Agree with recommendation	X			
1. Specify a set of target percentages for native ((i.e. 50% native w/ a bonus for 75 or 100 percent thresholds; specifically allow cultivars which are not hybrid crosses with non-natives. 2. Agree with recommendation.		X		
1. Recommend decompaction standard. 2. Agree with recommendation.		X		
1. School site parking requirements are not a function of a zoning element. School parking requirements vary depending on the type and size of the school and its staff.		X		
1. Agree with recommendation	X			

Relevant Code, Standard, Specification or Policy: ALL CODES

ROW NUMBER	Relevant ESD Type	Section #	Opportunity, Barrier, or Gap	Preliminary Recommended Changes	Relevant Other Code	Notes and Questions
198	enhanced filters, landscape infiltration, micro bioretention, rain gardens, swales, stormwater planters, expanded tree pits	Sec. 59-E-4.4. Contents of the parking facilities plan.	Opportunity	include requirement for X% of plant material to be native <del>plant requirement</del> . Offer incentive for larger %		see language in notes for maintenance
199	general	Include special section on ESD guidelines, <del>such as</del> similar to section 59-C-5.436. Special Trip Reduction Guidelines.	Opportunity			
200	general	Include site design standards like those in 59-C-5.473. Development standards	Opportunity			
201	general	Consider ESD requirements based on building size - i.e. if greater than 15000 sq feet it must include these ESD features, if greater than 50,000 feet, it must include this set of features, etc.	Opportunity			
202	general	Allow greater FAR (floor to area ratio) if state-of-the-art ESD features included	Opportunity			
203	TREES APPROVED TECHNICAL MANUAL					
204						
205						
206	general	Trees Approved Technical Manual	Opportunity/Gap	Include ESD as options for urban and suburban area retention with some aforestation possible within ESDs (landscape infiltration, rain gardens, swales, etc.)		

COMMENTS	POTENTIAL DIFFICULTY OF IMPLEMENTATION			REPETITIVE, UNNECESSARY, OR INAPPROPRIATE
	EASY	DIFFICULT	VERY DIFFICULT	
1. Provide incentive for native uses. define native to include cultivars which are not hybrid crosses with non-natives; allow for non-invasive non-natives; we have moved 1/2 of a zone south according to climate mappers so native should include some species which may seem further South in their provenance but which are our new "natives". 2. Agree with recommendation.		X		
	X			
1. Strict regulations/standards that mandate particular locations, setbacks etc can limit the flexibility often needed to locate ESDs on already restrictive sites.		X		
1. Should not be structured so as to preclude the use of other or alternate environmentally conscientious and beneficial technologies, e.g. photovoltaic.		X		
1. Agree with preliminary recommendation - Create incentives for incorporating ESDs and increase credits for use of ESDs above and beyond those required to meet stormwater management requirements.	X			
1. Create opportunities for development to meet on-site afforestation requirements via the use of ESD Plantings.		X		

## Attachment D. Comments on Draft Report

**PLACEHOLDER FOR FUTURE ATTACHMENT**



## **Attachment E. Summary of Past Stakeholder Discussions Related to Street Trees and Stormwater**

**PLACEHOLDER FOR FUTURE ATTACHMENT**



## **Attachment F. Planning Sustainability Audit, Stormwater Components**



STORMWATER							
Sustainability Objective	Code Section	Priority Level	Applicable Context	Existing Code	Recommended Changes	References	Notes
URBAN CONTEXT							
Manage stormwater volume before it reaches stream	stormwater policy	1	Urban	NPDES Permit Requirement - watershed mgmt plans required by county NPDES permit; county Stormwater Ordinance - with watershed plan in place, can get a waiver for volume retention if it's an infill or redev site, or if site's circumstances prohibit possibility of accommodation	PRIORITIZE the development of watershed management plans for those watersheds containing urban areas within the county CONSIDER mapping urban areas eligible to receive waivers for volume retention requirements	Smart Code Sustainable Urbanism module	
Protect watershed by managing flow rate	stormwater ordinance	1	Urban	MD Stormwater Design Manual, County Stormwater Ordinance			
Protect water quality to the greatest extent feasible	stormwater ordinance	1	Urban	MD Stormwater Design Manual, County Stormwater Ordinance			
Infiltrate/reuse as much volume as possible without inhibiting dense urban development	stormwater ordinance	1	Urban	MD Stormwater Design Manual, Stormwater Management Plan	LIMIT infiltration methods to those which do not affect density or result in single use stormwater areas (see context areas listed below with each retention method)		
Encourage district stormwater systems	stormwater policy	1	Urban	Permitted in MD Stormwater Design Manual, County Stormwater Ordinance	ENCOURAGE district systems, including public facilities		
SUBURBAN / RURAL CONTEXT							
Manage appropriate volume on-site or in district systems	stormwater ordinance	1	All but Urban	MD Model Stormwater Ordinance: 50% or 1-2.6" (depending on context, p.16) of rain, County Stormwater Ordinance		Smart Code Sustainable Urbanism module	
Protect watershed by managing flow rate	stormwater ordinance	1	All but Urban	MD Stormwater Design Manual, County Stormwater Ordinance			
Protect water quality to the greatest extent feasible	stormwater ordinance	1	All	MD Stormwater Design Manual, County Stormwater Ordinance			

STORMWATER							
Sustainability Objective	Code Section	Priority Level	Applicable Context	Existing Code	Recommended Changes	References	Notes
Avoid single use stormwater facilities/features	Subdivision, stormwater ordinance	1	All	MD Stormwater Design Manual emphasizes the utilization of non-structural methods over structural methods; no requirement for multi-use structural methods	PROHIBIT the development of single use stormwater facilities REQUIRE detention and retention to also serve as parks or open space LIMIT retaining wall height to avoid extreme grades, prohibit fences, require public access, and require design by a landscape architect		
Require appropriate infiltration methods	stormwater ordinance	1	All but Urban	MD Stormwater Design Manual, County Stormwater Ordinance	REQUIRE use of decentralized infiltration methods to meet volume requirements (see context areas)		
Encourage district stormwater systems	stormwater ordinance	1	All	Permitted in MD Stormwater Design Manual, County Stormwater Ordinance			
RETENTION METHOD: INFILTRATE STORMWATER							
Green roofs	Zoning (development standards)	1	All	Section 5.3, A-1 of MD Stormwater Manual as an acceptable micro scale practice for ESD (M-5); design standards provided	ENCOURAGE green roofs on high density buildings which have little opportunity for green space on the ground (Urban areas) REVISE definition of green area to include green roofs		County's Rainscapes Rewards program gives up to \$1,200 per SF lot, \$5,000 per other lot, \$2,200 per SF lot in a targeted area (degraded watershed) for use of green roof
Rain gardens/swales	stormwater ordinance, Road Code	1	All but Urban	Included in MD Stormwater Manual, Chapter 5, as an acceptable micro scale practice for ESD (M-5); design standards provided	PERMIT swales in the area from the back of curb or edge of pavement to the sidewalk in the right-of-way		County's Rainscapes Rewards program gives up to \$1,200 per SF lot, \$5,000 per other lot, \$2,200 per SF lot in a targeted area (degraded watershed) for use of rain gardens
Landscape infiltration (retention areas)	stormwater ordinance, Subdivision	1	Rural Sub-Res TND-Res	MD Stormwater Design Manual			

STORMWATER							
Sustainability Objective	Code Section	Priority Level	Applicable Context	Existing Code	Recommended Changes	References	Notes
Tree canopy cover for interception and evapotranspiration	Zoning (landscape)	1	All		SEE TREE CANOPY		County's Rainscapes Rewards program gives up to \$1,200 per SF lot, \$5,000 per other lot, \$2,200 per SF lot in a targeted area (degraded watershed) for creation of new tree canopy coverage
Vegetated stormwater planters	Zoning (parking)	1	TND-Com Sub-Com Urban Campus	Micro bioretention practices (including stormwater planters) included in MD Stormwater Manual, Chapter 5, as an acceptable micro scale practice for ESD (M-5); design standards provided			
Parking lot stormwater filtration	Zoning (parking)	1	All	59-E-2.74: Islands at head of parking spaces must be minimum 8' wide, while islands parallel to parking spaces must be minimum 8 1/2' wide	REQUIRE islands between bays of parking to provide stormwater planters that will filter and infiltrate stormwater off paving surfaces		
Underground gravel storage (district)	stormwater ordinance, Zoning (parking)	2	Sub-Com TND-Com Urban Campus	Included in MD Stormwater Manual, Chapter 5, as an acceptable micro scale practice for ESD (M-5); design standards provided	PERMIT underground gravel storage of stormwater underneath parking lots		
Dry wells	stormwater ordinance	2	All	Included in MD Stormwater Manual, Chapter 5, as an acceptable micro scale practice for ESD (M-5); design standards provided			
RETENTION METHOD: REUSE STORMWATER							
Reuse of stormwater for irrigation	Zoning (development standards)	1	All	59-C-1.326: Cisterns/rainbarrels not included in definition of accessory structure for setback 59-C-5.434. Enclosed building and temporary outdoor storage does not expressly permit expressly cisterns/rainbarrels Rainwater harvesting included in MD Stormwater Manual, Chapter 5, as an acceptable micro scale practice for ESD (M-5); design standards provided	PERMIT cisterns/rainbarrels expressly as accessory structure in rear or side yards as long as setback requirements are met		County's Rainscapes Rewards program gives up to \$1,200 per SF lot, \$5,000 per other lot, \$2,200 per SF lot in a targeted area (degraded watershed) for use of green roof

STORMWATER							
Sustainability Objective	Code Section	Priority Level	Applicable Context	Existing Code	Recommended Changes	References	Notes
Greywater systems	WSSC Building Code, IBC Building Code	2	All	International Plumbing Code, adopted by the WSSC in 2009, permits greywater systems for underground irrigation and toilet flushing	PERMIT the use of internal greywater systems within buildings, permitting harvested rainwater to be re-used for non-potable uses within buildings such as toilet flushing	LEED-ND (GIB P1: Green Buildings and P3: Building Water Efficiency); NSW Government Department of Water and Energy; State of Montana	Promote the use of greywater systems within buildings for irrigation and toilet flushing
RETENTION METHOD: LIMIT IMPERVIOUS AREAS							
Permeable pavement	Zoning (parking),	1	All	No mention of permeable pavement in 59-E. Parking; 59-C-1.353. Streets; 59-C-7.58. Parking facilities; 59-C-7.772. Surface parking Included in Section 5.3, A-2 of MD Stormwater Manual	PERMIT the use of permeable pavement (asphalt, concrete, pavers) for parking lots and residential driveways and patios	City of Chicago Green Alley program; Portland Green Streets program	County's Rainscapes Rewards program gives up to \$1,200 per SF lot, \$5,000 per other lot, \$2,200 per SF lot in a targeted area (degraded watershed) for use of permeable pavers
	Subdivision, Public Works, Road Code	1	All	No mention in Ch. 51 Subdivision No mention in Road Code Included in Section 5.3, A-2 of MD Stormwater Manual	PERMIT the use of permeable pavement (asphalt, concrete, pavers) for on-street parking spaces (as % of spaces or more than x distance from entrance) PERMIT use of permeable pavement for new alleys developed as a subdivision	City of Chicago Green Alley program; Portland Green Streets program	County's Rainscapes Rewards program gives up to \$1,200 per SF lot, \$5,000 per other lot, \$2,200 per SF lot in a targeted area (degraded watershed) for use of permeable pavers
Parking lot pavement	Zoning (landscape, parking)	1	TND-Com Sub-Com Urban Campus	59-E-2.41: All driveways must have minimum 10' width for 1-way traffic, 20' width for 2-way traffic	LIMIT size of parking lot drives and parking spaces. SEE PARKING to reduce required number of spaces and size of parking spaces		

STORMWATER							
Sustainability Objective	Code Section	Priority Level	Applicable Context	Existing Code	Recommended Changes	References	Notes
Driveway width	Zoning (parking)	1	All	59-E-2.41: All driveways must have minimum 10' width for 1-way traffic, 20' width for 2-way traffic 59-C-15.65: CR Zones - If drive-through is incorporated, maximum 20' driveway for 2-way traffic, 10' driveway for 1-way traffic	LIMIT driveways to 11' wide in areas 1,2,3 within the front yard zone LIMIT driveways to 22' wide in areas 4,5,6,7, except in industrial areas (30') ALLOW driveways to incorporate a center landscape area to decrease impervious area ALLOW driveways to utilize reinforced grass paving		
Additional areas of imperviousness	Zoning (development standards)	1	All	59-A-2.1: Current definition of green area includes: lawns, decorative plantings, side-walks, walkways, active/passive recreational areas including children's playgrounds, public plazas, fountains, swimming pools, wooded areas, watercourses	LIMIT impervious surfaces in "green areas" of lots		
Minimum street width	Subdivision, Road Code	1	All	Minimum private street width 10' for one-way traffic, 20' for two-way traffic (59-C-8.53: TS-R, 59-C-2.21: Multifamily zones, 59-C-4.336: C-P campus) 59-C-7.482: Planned retirement zone - private street width minimum 12' for 1-way traffic, 22' for 2-way traffic Road Code has different street widths for rural, suburban, and urban contexts	EVALUATE appropriate minimum street widths based on context area		

